Report No. : FR361614AA





RADIO TEST REPORT

FCC ID	: WR932181716523
Equipment	: Video doorbell
Brand Name	: ecobee
Model Name	: EB-CAMSDB-01
Applicant	: Ecobee Incorporated 25, Dockside Drive Suite 700, Toronto, Canada, M5A0B5
Standard	: 47 CFR FCC Part 15.247

The product was received on Jul. 10, 2023, and testing was started from Jul. 21, 2023 and completed on Aug. 07, 2023. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2013 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

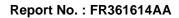
Sporton International Inc. Hsinchu Laboratory No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.)



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Photographs of EUT v01





History of this test report

Report No.	Version	Description	Issued Date
FR361614AA	01	Initial issue of report	Aug. 31, 2023



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
1.1.2	15.203	Antenna Requirement	PASS	-
3.1	15.207	AC Power-line Conducted Emissions	PASS	-
3.2	15.247(a)	DTS Bandwidth	PASS	-
3.3	15.247(b)	Maximum Conducted Output Power	PASS	-
3.4	15.247(e)	Power Spectral Density	PASS	-
3.5	15.247(d)	Emissions in Non-restricted Frequency Bands	PASS	-
3.6	15.247(d)	Emissions in Restricted Frequency Bands	PASS	-

Conformity Assessment Condition:

- 1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
- 2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen Report Producer: Sophia Shiung



1 General Description

1.1 Information

1.1.1 **RF General Information**

Frequency Range (MHz)	IEEE Std. 802.11	Ch. Frequency (MHz)	Channel Number
2400-2483.5	b, g, n (HT20)	2412-2462	1-11 [11]

Band	Mode	BWch (MHz)	Nant
2.4-2.4835GHz	802.11b	20	1TX
2.4-2.4835GHz	802.11g	20	1TX
2.4-2.4835GHz	802.11n HT20	20	1TX

Note:

• 11b mode uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.

• 11g and HT20 use a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

• BWch is the nominal channel bandwidth.





1.1.2 Antenna Information

		Port				Antonno		Gain
Ant.	WLAN / Bluetooth	Thread	Sub-G	Brand	Model Name	Antenna Type	Connector	(dBi)
1	1	-	-	PSA	RFMTA160900NNLB001	PIFA	N/A	
2	-	1	-	PSA	RFPCA361205IMAB401	PIFA	I-PEX	Note 1
3	-	-	1	PSA	RFMTA341100NNUB001	PIFA	N/A	

Ant.	Brand	Model Name	Antenna Type	Connector	Gain (dBi)
4	Socionext	SC1233AR3	Chip	N/A	2

Note 1:

	Antenna Gain (dBi)							
Ant.	WLAN		Blueteeth	Threed	Sub C			
	2.4GHz	5GHz	Bluetooth	Thread	Sub-G			
1	2.81	4.99	2.81	-	-			
2	-	-	-	3.00	-			
3	-	-	-	-	1.66			

Note 2: The above information was declared by manufacturer.

Note 3: For 2.4GHz function:

For IEEE 802.11 b/g/n (TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

For 5GHz function:

For IEEE 802.11a/n/ac (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

For bluetooth function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

For Thread function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

For Sub-G function (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.

For 24GHz function (1TX/2RX):

Only Ant. 4 can be used as transmitting/receiving antenna.



1.1.3 Mode Test Duty Cycle

Mode	DC	DCF(dB)	T(s)	VBW(Hz) ≥ 1/T
802.11b	0.978	0.1	12.425m	100
802.11g	0.879	0.56	2.065m	1k
802.11n HT20	0.87	0.6	1.92m	1k

Note:

• DC is Duty Cycle.

DCF is Duty Cycle Factor.

1.1.4 EUT Operational Condition

EUT Power Type	From host system (16~24 Vac)				
Beamforming Function	□ With beamforming □ Without beamforming				
Function	\boxtimes	Point-to-multipoint		Point-to-point	
Test Software Version	Tera Tern Ver:4.75				

Note: The above information was declared by manufacturer.



1.2 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15.247
- ANSI C63.10-2013

The following reference test guidance is not within the scope of accreditation of TAF.

- FCC KDB 558074 D01 v05r02
- FCC KDB 414788 D01 v01r01

1.3 Testing Location Information

Testing Location Information Test Lab. : Sporton International Inc. Hsinchu Laboratory Hsinchu ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) (TAF: 3787) TEL: 886-3-656-9065 FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISED.

Test Condition	Test Site No.	Test Engineer	Test Environment (°C / %)	Test Date
RF Conducted	TH01-CB	Jay Lo	23.1~24.5 / 68~72	Jul. 31, 2023~ Aug. 04, 2023
Radiated < 1GHz	03CH05-CB	George Fan	22.9~23.6 / 60~63	Jul. 31, 2023~ Aug. 03, 2023
Radiated > 1GHz	03CH05-CB	George Fan	20~21 / 55~58	Jul. 21, 2023~
	03CH06-CB		21.7~22.8 / 56~59	Jul. 26, 2023
AC Conduction	CO01-CB	Ryan Huang	22~23 / 56~57	Aug. 07, 2023



1.4 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Test Items	Uncertainty	Remark
Conducted Emission (150kHz ~ 30MHz)	3.4 dB	Confidence levels of 95%
Radiated Emission (9kHz ~ 30MHz)	3.7 dB	Confidence levels of 95%
Radiated Emission (30MHz ~ 1,000MHz)	5.1 dB	Confidence levels of 95%
Radiated Emission (1GHz ~ 18GHz)	4.1 dB	Confidence levels of 95%
Radiated Emission (18GHz ~ 40GHz)	4.2 dB	Confidence levels of 95%
Conducted Emission	3.1 dB	Confidence levels of 95%
Output Power Measurement	0.8 dB	Confidence levels of 95%
Power Density Measurement	3.1 dB	Confidence levels of 95%
Bandwidth Measurement	2.2%	Confidence levels of 95%



2 Test Configuration of EUT

2.1 Test Channel Mode

Mode	Power Setting
802.11b_Nss1,(1Mbps)_1TX	-
2412MHz	20
2417MHz	21
2437MHz	23
2457MHz	21
2462MHz	19
802.11g_Nss1,(6Mbps)_1TX	-
2412MHz	17
2417MHz	18
2437MHz	23
2457MHz	18
2462MHz	17
802.11n HT20_Nss1,(MCS0)_1TX	-
2412MHz	18
2417MHz	19
2437MHz	23
2457MHz	20
2462MHz	18

2.2 The Worst Case Measurement Configuration

Th	The Worst Case Mode for Following Conformance Tests			
Tests Item	AC power-line conducted emissions			
Condition	AC power-line conducted measurement for line and neutral Test Voltage: 120Vac / 60Hz			
Operating Mode	Normal Link			
1	1 EUT_WLAN 2.4GHz + Thread + 24GHz radar			
2	EUT_WLAN 5GHz + Thread + 24GHz radar			
3	EUT_Bluetooth + Thread + 24GHz radar			
Mode 3 has been evaluated to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will follow this same test mode.				
4 EUT_Bluetooth + Sub-G (Hopping mode) + 24GHz radar				
5 EUT_Bluetooth + Sub-G (Hybrid mode) + 24GHz radar				
For operating, mode 3 is the worst case and it was record in this test report.				



The Worst Case Mode for Following Conformance Tests		
Tests Item	DTS Bandwidth Maximum Conducted Output Power Power Spectral Density Emissions in Non-restricted Frequency Bands	
Test Condition	Conducted measurement at transmit chains	

Th	The Worst Case Mode for Following Conformance Tests			
Tests Item Emissions in Restricted Frequency Bands				
Test Condition	Radiated measurement If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type.			
	Normal Link			
Operating Mode < 1GHz	After evaluating, EUT in Y axis was the worst case, so the measurement will follow this same test configuration.			
1	EUT in Y axis_WLAN 2.4GHz + Thread + 24GHz radar			
2	EUT in Y axis_WLAN 5GHz + Thread + 24GHz radar			
3	EUT in Y axis_Bluetooth + Thread + 24GHz radar			
Mode 3 has been evaluate follow this same test mode	ed to be the worst case among Mode 1~3, thus measurement for Mode 4~5 will			
4	EUT in Y axis_Bluetooth + Sub-G (Hopping mode) + 24GHz radar			
5	EUT in Y axis_Bluetooth + Sub-G (Hybrid mode) + 24GHz radar			
For operating, mode 3 is th	he worst case and it was record in this test report.			
	СТХ			
Operating Mode > 1GHz	After evaluating, EUT in Y axis was the worst case, so the measurement will follow this same test configuration.			
1	EUT in Y axis			



The Worst Case Mode for Following Conformance Tests			
Tests Item	Tests Item Simultaneous Transmission Analysis - Co-location RF Exposure Evaluation		
Operating Mode			
1	WLAN 2.4GHz + Thread + 24GHz radar		
2	WLAN 2.4GHz + Sub-G (Hopping mode) + 24GHz radar		
3 WLAN 2.4GHz + Sub-G (Hybrid mode) + 24GHz radar			
4 WLAN 5GHz + Thread + 24GHz radar			
5 WLAN 5GHz + Sub-G (Hopping mode) + 24GHz radar			
6	6 WLAN 5GHz + Sub-G (Hybrid mode) + 24GHz radar		
7	Bluetooth + Thread + 24GHz radar		
8	Bluetooth + Sub-G (Hopping mode) + 24GHz radar		
9	9 Bluetooth + Sub-G (Hybrid mode) + 24GHz radar		
Refer to Sporton Test Report No.: FA361614 for Co-location RF Exposure Evaluation.			

Note: The adapter was for measurement only and would not be marketed. Its information is shown as below:

Equipment	Brand Name	Model Name	
Power adapter AMIGO		CT-5723-03	

2.3 EUT Operation during Test

For CTX Mode:

The EUT was programmed to be in continuously transmitting mode.

For Normal Link Mode:

During the test, the EUT operation to normal function.

2.4 Accessories

Accessories
CHIME adapter*1: Non-shielded, 0.2m
Backplate*1



2.5 Support Equipment

For AC Conduction:

Support Equipment				
No.	Equipment	Brand Name	Model Name	FCC ID
А	Power adapter	AMIGO	CT-5723-03	N/A
В	Test fixture	NEWHOUSE	CHM1	N/A
С	NB	DELL	PP13S	N/A

For Radiated (below 1GHz):

Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID			
А	Power adapter	AMIGO	CT-5723-03	N/A
В	Test fixture	NEWHOUSE	CHM1	N/A
С	NB	DELL	PP13S	N/A

For Radiated (above 1GHz):

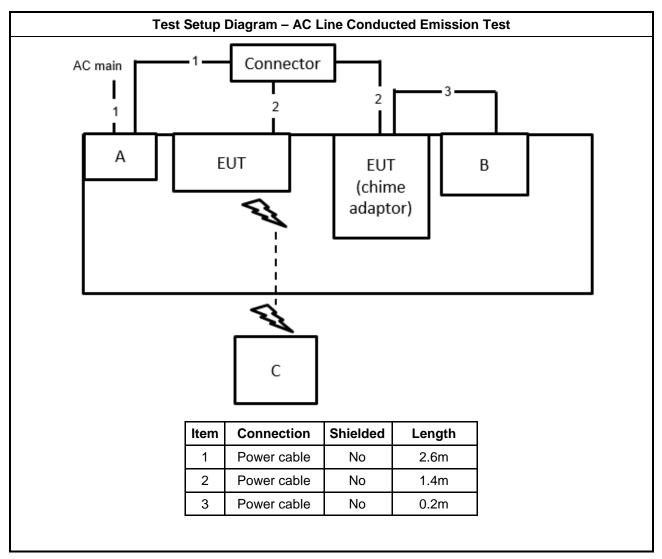
	Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID				
А	NB	DELL	E4300	N/A	
В	Fixture	ALPHA	1EBRC21TA2G	N/A	
С	Power adapter	AMIGO	CT-5723-03	N/A	

For RF Conducted:

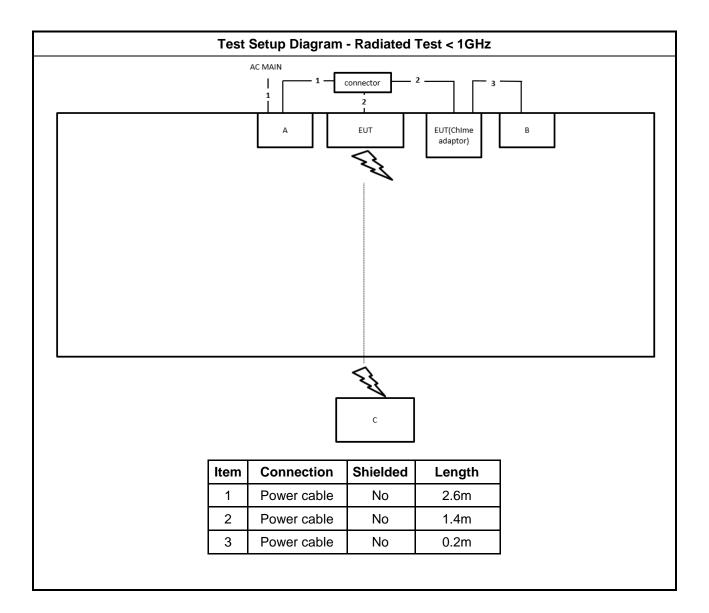
	Support Equipment				
No.	No. Equipment Brand Name Model Name FCC ID				
А	NB	DELL	E4300	N/A	
В	Fixture	ALPHA	1EBRC21TA2G	N/A	
С	Power adapter	AMIGO	CT-5723-03	N/A	



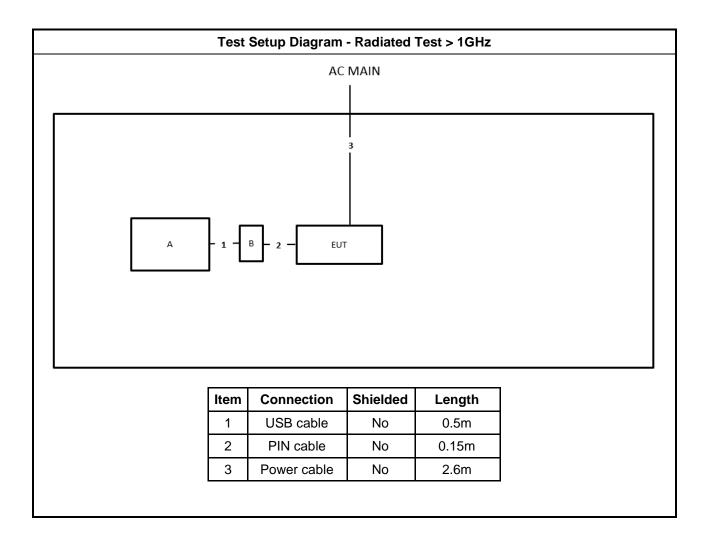
2.6 Test Setup Diagram













3 Transmitter Test Result

3.1 AC Power-line Conducted Emissions

3.1.1 AC Power-line Conducted Emissions Limit

AC Power-line Conducted Emissions Limit						
Frequency Emission (MHz) Quasi-Peak Average						
0.15-0.5 66 - 56 * 56 - 46 *						
0.5-5	56	46				
5-30 60 50						
Note 1: * Decreases with the logarithm	of the frequency.					

3.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

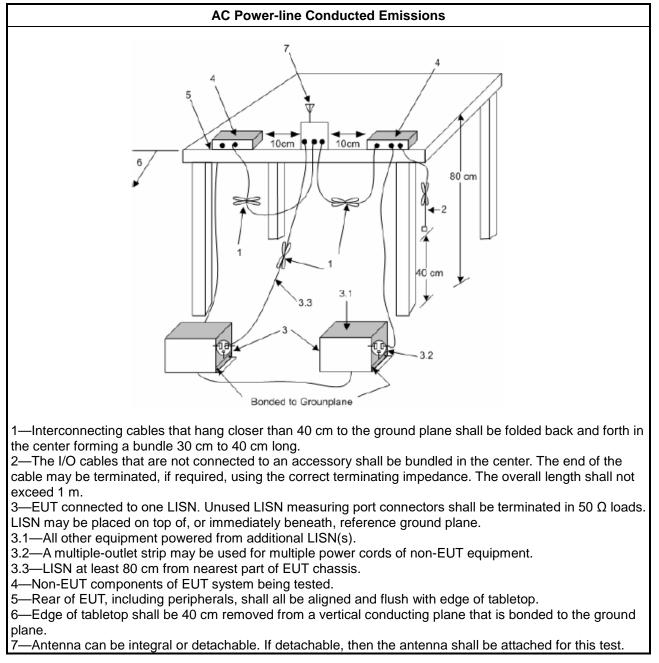
3.1.3 Test Procedures

Test Method

Refer as ANSI C63.10-2013, clause 6.2 for AC power-line conducted emissions.



3.1.4 Test Setup



3.1.5 Measurement Results Calculation

The measured Level is calculated using:

- a. Corrected Reading: LISN Factor (LISN) + Attenuator (AT/AUX) + Cable Loss (CL) + Read Level (Raw) = Level
- b. Margin = -Limit + Level

3.1.6 Test Result of AC Power-line Conducted Emissions

Refer as Appendix A



3.2 **DTS Bandwidth**

3.2.1 6dB Bandwidth Limit

6dB Bandwidth Limit				
Systems using digital modulation techniques:				
 6 dB bandwidth ≥ 500 kHz. 				

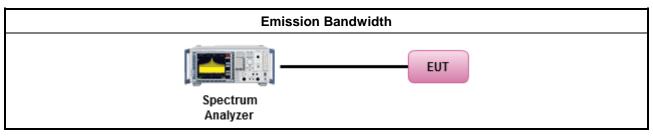
3.2.2 **Measuring Instruments**

Refer a test equipment and calibration data table in this test report.

3.2.3 **Test Procedures**

For								
	the emission bandwidth shall be measured using one of the options below:							
	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.1 Option 1 for 6 dB bandwidth measurement.							
	Refer as FCC KDB 558074, clause 8.2 & C63.10 clause 11.8.2 Option 2 for 6 dB bandwidth measurement.							
	Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing.							

Test Setup 3.2.4



3.2.5 **Test Result of Emission Bandwidth**

Refer as Appendix B



3.3 Maximum Conducted Output Power

3.3.1 Maximum Conducted Output Power Limit

Maximum Conducted Output Power Limit

	If $G_{TX} \le 6$ dBi, then $P_{Out} \le 30$ dBm (1 W)
-	If $G_{TX} \leq 6$ dBI, then $P_{Out} \leq 30$ dBm (1 VV)

•	Point-to-multipoint systems	(P2M): If (G⊤x > 6 dBi,	then $P_{\text{Out}} = 30$	– (G⊤x – 6) dBm
---	-----------------------------	-------------	--------------	----------------------------	-----------------

- Point-to-point systems (P2P): If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3$ dBm
- Smart antenna system (SAS):
 - Single beam: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3$ dBm
 - Overlap beam: If $G_{TX} > 6 \text{ dBi}$, then $P_{Out} = 30 (G_{TX} 6)/3 \text{ dBm}$
 - Aggregate power on all beams: If $G_{TX} > 6$ dBi, then $P_{Out} = 30 (G_{TX} 6)/3 + 8$ dB dBm

 P_{out} = maximum peak conducted output power or maximum conducted output power in dBm, G_{TX} = the maximum transmitting antenna directional gain in dBi.

3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

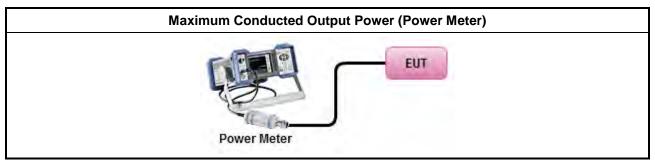


3.3.3 Test Procedures

		Test Method							
•	Мах	imum Peak Conducted Output Power							
		Refer as FCC KDB 558074, clause 8.3.1.1 & C63.10 clause 11.9.1.1 (RBW ≥ EBW method).							
		Refer as FCC KDB 558074, clause 8.3.1.3 & C63.10 clause 11.9.1.3 (peak power meter).							
•	Мах	imum Conducted Output Power							
	[duty cycle ≥ 98% or external video / power trigger]								
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.2 Method AVGSA-1.							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.3 Method AVGSA-1A. (alternative)							
	duty	cycle < 98% and average over on/off periods with duty factor							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.4 Method AVGSA-2.							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.5 Method AVGSA-2A (alternative)							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.6 Method AVGSA-3							
		Refer as FCC KDB 558074, clause 8.3.2.2 & C63.10 clause 11.9.2.2.7 Method AVGSA-3A (alternative)							
	Mea	surement using a power meter (PM)							
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.1 Method AVGPM (using an RF average power meter).							
		Refer as FCC KDB 558074, clause 8.3.2.3 & C63.10 clause 11.9.2.3.2 Method AVGPM-G (using an gate RF average power meter).							
•	For	conducted measurement.							
	 If the EUT supports multiple transmit chains using options given below: Refer as FCC KDB 662911, In-band power measurements. Using the measure-and approach, measured all transmit ports individually. Sum the power (in linear power units e.g., of all ports for each individual sample and save them. 								
	•	If multiple transmit chains, EIRP calculation could be following as methods: $P_{total} = P_1 + P_2 + + P_n$ (calculated in linear unit [mW] and transfer to log unit [dBm]) EIRP _{total} = P _{total} + DG							



3.3.4 Test Setup



3.3.5 Test Result of Maximum Conducted Output Power

Refer as Appendix C



3.4 Power Spectral Density

3.4.1 Power Spectral Density Limit

Power Spectral Density Limit

■ Power Spectral Density (PSD) ≤ 8 dBm/3kHz

3.4.2 Measuring Instruments

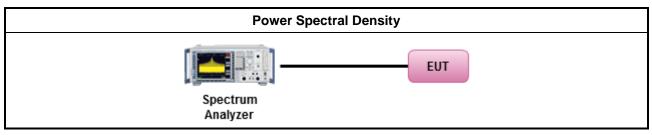
Refer a test equipment and calibration data table in this test report.

3.4.3 Test Procedures

	Test Method								
•	 Peak power spectral density procedures that the same method as used to determine the conducted output power. If maximum peak conducted output power was measured to demonstrate compliance to the output power limit, then the peak PSD procedure below (Method PKPSD) shall be used. If maximum conducted output power was measured to demonstrate compliance to the output power limit, then one of the average PSD procedures shall be used, as applicable based on the following criteria (the peak PSD procedure is also an acceptable option). 								
	\square	Refe	er as FCC KDB 558074, clause 8.4 & C63.10 clause 11.10 Method Max. PSD.						
•	For	cond	ucted measurement.						
	•	lf Th	ne EUT supports multiple transmit chains using options given below:						
			Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power spectral density (PSD). Sample all transmit ports simultaneously using a spectrum analyzer for each transmit port. Where the trace bin-by-bin of each transmit port summing can be performed. (i.e., in the first spectral bin of output 1 is summed with that in the first spectral bin of output 2 and that from the first spectral bin of output 3, and so on up to the NTX output to obtain the value for the first frequency bin of the summed spectrum.). Add up the amplitude (power) values for the different transmit chains and use this as the new data trace.						
			Option 2: Measure and sum spectral maxima across the outputs. With this technique, spectra are measured at each output of the device at the required resolution bandwidth. The maximum value (peak) of each spectrum is determined. These maximum values are then summed mathematically in linear power units across the outputs. These operations shall be performed separately over frequency spans that have different out-of-band or spurious emission limits,						
			Option 3: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit.						



3.4.4 Test Setup



3.4.5 Test Result of Power Spectral Density

Refer as Appendix D



3.5 Emissions in Non-restricted Frequency Bands

3.5.1 Emissions in Non-restricted Frequency Bands Limit

Un-restricted Band Emissions Limit						
RF output power procedure Limit (dBc)						
Peak output power procedure	20					
Average output power procedure	30					

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

3.5.2 Measuring Instruments

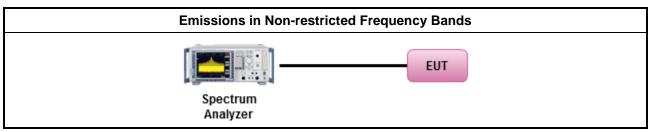
Refer a test equipment and calibration data table in this test report.

3.5.3 Test Procedures

Test Method

Refer as FCC KDB 558074, clause 8.5 for unwanted emissions into non-restricted bands.

3.5.4 Test Setup



3.5.5 Test Result of Emissions in Non-restricted Frequency Bands

Refer as Appendix E



3.6 Emissions in Restricted Frequency Bands

3.6.1 Emissions in Restricted Frequency Bands Limit

Restricted Band Emissions Limit								
Frequency Range (MHz) Field Strength (uV/m) Field Strength (dBuV/m) Measure Distance (
0.009~0.490 2400/F(kHz)		48.5 - 13.8	300					
0.490~1.705 24000/F(kHz)		33.8 - 23	30					
1.705~30.0 30 30~88 100		29	30					
		40	3					
88~216	150	43.5	3					
216~960	200	46	3					
Above 960	500	54	3					

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Note 3: Using the distance of 1m during the test for above 18 GHz, and the test value to correct for the distance factor at 3m.

3.6.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

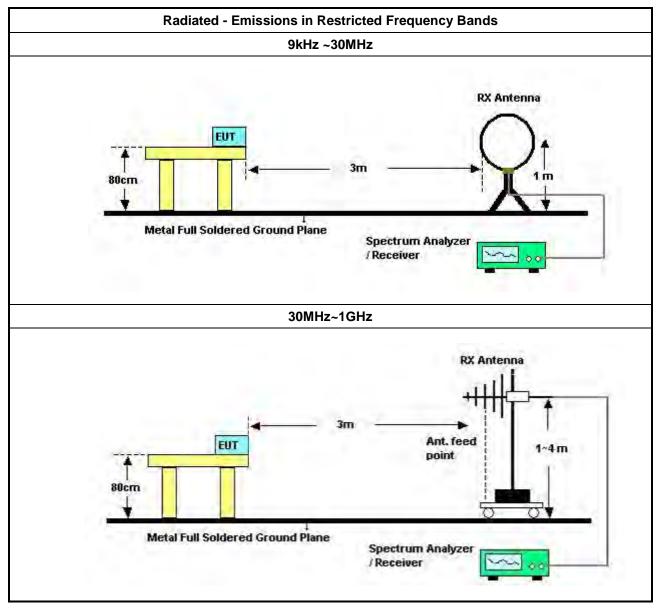


3.6.3 Test Procedures

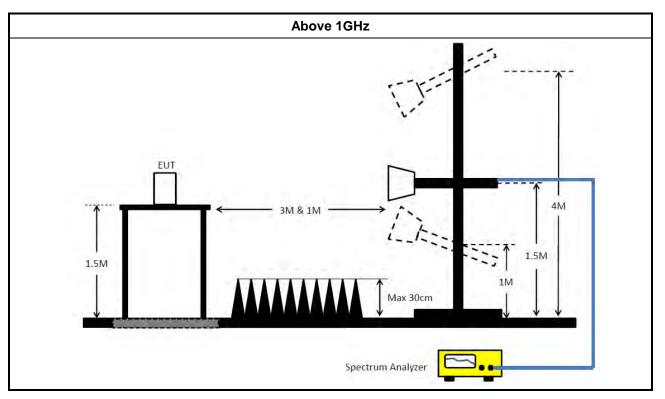
	Test Method							
•	The average emission levels shall be measured in [duty cycle \geq 98 or duty factor].							
•	Refer as ANSI C63.10, clause 6.10.3 band-edge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band.							
•	 For the transmitter unwanted emissions shall be measured using following options below: 							
	 Refer as FCC KDB 558074, clause 8.6 for unwanted emissions into restricted bands. 							
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.1(trace averaging for duty cycle ≥98%).							
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.2(trace averaging + duty factor).							
	☑ Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.5.3(Reduced VBW≥1/T).							
	□ Refer as ANSI C63.10, clause 11.12.2.5.3 (Reduced VBW). VBW \ge 1/T, where T is pulse time.							
	Refer as ANSI C63.10, clause 7.5 average value of pulsed emissions.							
	Refer as FCC KDB 558074, clause 8.6 & C63.10 clause 11.12.2.4 measurement procedure peak limit.							
•	For the transmitter band-edge emissions shall be measured using following options below:							
	 Refer as FCC KDB 558074 clause 8.7 & C63.10 clause 11.13.1, When the performing peak or average radiated measurements, emissions within 2 MHz of the authorized band edge may be measured using the marker-delta method described below. 							
	 Refer as FCC KDB 558074, clause 8.7 (ANSI C63.10, clause 6.10.6) for marker-delta method for band-edge measurements. 							
	 Refer as FCC KDB 558074, clause 8.7 for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz). 							
	 For conducted unwanted emissions into restricted bands (absolute emission limits). Devices with multiple transmit chains using options given below: (1) Measure and sum the spectra across the outputs or (2) Measure and add 10 log(N) dB 							
	 For FCC KDB 662911 The methodology described here may overestimate array gain, thereby resulting in apparent failures to satisfy the out-of-band limits even if the device is actually compliant. In such cases, compliance may be demonstrated by performing radiated tests around the frequencies at which the apparent failures occurred. 							



3.6.4 Test Setup







3.6.5 Measurement Results Calculation

The measured Level is calculated using:

Corrected Reading: Antenna factor (AF) + Cable loss (CL) + Read level (Raw) - Preamp factor (PA)(if applicable) = Level.

3.6.6 Emissions in Restricted Frequency Bands (Below 30MHz)

There is a comparison data of both open-field test site and alternative test site - semi-Anechoic chamber according to KDB414788 Radiated Test Site, and the result came out very similar.

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

The radiated emissions were investigated from 9 kHz or the lowest frequency generated within the device, up to the 10th harmonic or 40 GHz, whichever is appropriate.

3.6.7 Test Result of Emissions in Restricted Frequency Bands

Refer as Appendix F



4 Test Equipment and Calibration Data

Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
EMI Receiver	Agilent	N9038A	My52260123	9kHz ~ 8.4GHz	Feb. 20, 2023	Feb. 19, 2024	Conduction (CO01-CB)
LISN	F.C.C.	FCC-LISN-50- 16-2	04083	150kHz ~ 100MHz	Feb. 16, 2023	Feb. 15, 2024	Conduction (CO01-CB)
LISN	Schwarzbeck	NSLK 8127	8127647	9kHz ~ 30MHz	Apr. 27, 2023	Apr. 26, 2024	Conduction (CO01-CB)
Pulse Limiter	Rohde& Schwarz	ESH3-Z2	100430	9kHz ~ 30MHz	Feb. 09, 2023	Feb. 08, 2024	Conduction (CO01-CB)
COND Cable	Woken	Cable	Low cable-CO01	9kHz ~ 30MHz	Oct. 18, 2022	Oct. 17, 2023	Conduction (CO01-CB)
Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conduction (CO01-CB)
Loop Antenna	Teseq	HLA 6120	31244	9kHz - 30 MHz	Mar. 23, 2023	Mar. 22, 2024	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	ТDК	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 03, 2022	Aug. 02, 2023	Radiation (03CH05-CB)
3m Semi Anechoic Chamber NSA	TDK	SAC-3M	03CH05-CB	30 MHz ~ 1 GHz	Aug. 02, 2023	Aug. 01, 2024	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH05-CB	1GHz ~18GHz 3m	Nov. 06, 2022	Nov. 05, 2023	Radiation (03CH05-CB)
Bilog Antenna with 6dB Attenuator	TESEQ & EMCI	CBL 6112D & N-6-06	35236 & AT-N0610	30MHz ~ 2GHz	Mar. 24, 2023	Mar. 23, 2024	Radiation (03CH05-CB)
Horn Antenna	SCHWARZBE CK	BBHA9120D	BBHA 9120 D-1291	1GHz~18GHz	Jun. 08, 2023	Jun. 07, 2024	Radiation (03CH05-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2022	Aug. 21, 2023	Radiation (03CH05-CB)
Amplifier	EMCI	EMC330N	980331	20MHz ~ 3GHz	May 03, 2023	May 02, 2024	Radiation (03CH05-CB)
Pre-Amplifier	EMCI	EMC12630SE	980287	1GHz – 26.5GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH05-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 16, 2022	Nov. 15, 2023	Radiation (03CH05-CB)
Spectrum Analyzer	R&S	FSP40	100304	9kHz ~ 40GHz	Apr. 18, 2023	Apr. 17, 2024	Radiation (03CH05-CB)
EMI Test Receiver	R&S	ESCS	826547/017	9kHz ~ 2.75GHz	Jun. 13, 2023	Jun. 12, 2024	Radiation (03CH05-CB)
RF Cable-low	Woken	RG402	Low Cable-04+23	30MHz~1GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH05-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics	Calibration Date	Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-28	1GHz~18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH05-CB)
RF Cable-high	Woken	RG402	High Cable-04+28	1GHz~18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH05-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH05-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH05-CB)
3m Semi Anechoic Chamber VSWR	TDK	SAC-3M	03CH06-CB	1GHz ~18GHz 3m	Sep. 30, 2022	Sep. 29, 2023	Radiation (03CH06-CB)
Horn Antenna	SCHWARZBE CK	BBHA 9120 D	BBHA 9120 D 1370	1GHz~18GHz	Jun. 30, 2023	Jun. 29, 2024	Radiation (03CH06-CB)
Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170252	15GHz ~ 40GHz	Aug. 22, 2022	Aug. 21, 2023	Radiation (03CH06-CB)
Pre-Amplifier	Agilent	83017A	MY53270064	0.5GHz ~ 26.5GHz	Aug. 02, 2022	Aug. 01, 2023	Radiation (03CH06-CB)
Pre-Amplifier	SGH	SGH184	20221107-3	18GHz ~ 40GHz	Nov. 16, 2022	Nov. 15, 2023	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSP40	100080	9kHz~40GHz	Dec. 21, 2022	Dec. 20, 2023	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-68	1GHz~18GHz	Oct. 03, 2022	Oct. 02, 2023	Radiation (03CH06-CB)
RF Cable-high	Woken	RG402	High Cable-05+68	1GHz~18GHz	Dec. 21, 2022	Dec. 20, 2023	Radiation (03CH06-CB)
High Cable	Woken	WCA0929M	40G#5+6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH06-CB)
High Cable	Woken	WCA0929M	40G#5	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH06-CB)
High Cable	Woken	WCA0929M	40G#6	1GHz ~ 40 GHz	Dec. 07, 2022	Dec. 06, 2023	Radiation (03CH06-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Radiation (03CH06-CB)
Spectrum analyzer	R&S	FSV40	100979	9kHz~40GHz	May 29, 2023	May 28, 2024	Conducted (TH01-CB)
Switch	SPTCB	SP-SWI	SWI-01	1 GHz –26.5 GHz	Oct. 04, 2022	Oct. 03, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-06	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-07	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)

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Instrument	Brand	Model No.	Serial No.	Characteristics Calibration Date		Calibration Due Date	Remark
RF Cable-high	Woken	RG402	High Cable-08	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-09	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-10	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
RF Cable-high	Woken	RG402	High Cable-30	1 GHz – 18 GHz	Oct. 03, 2022	Oct. 02, 2023	Conducted (TH01-CB)
Power Sensor	Agilent	E9327A	US40442088	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Power Meter	Agilent	E4416A	GB41291199	50MHz~18GHz	Feb. 22, 2023	Feb. 21, 2024	Conducted (TH01-CB)
Test Software	SPORTON	SENSE	V5.10	-	N.C.R.	N.C.R.	Conducted (TH01-CB)

Note: Calibration Interval of instruments listed above is one year.

NCR means Non-Calibration required.



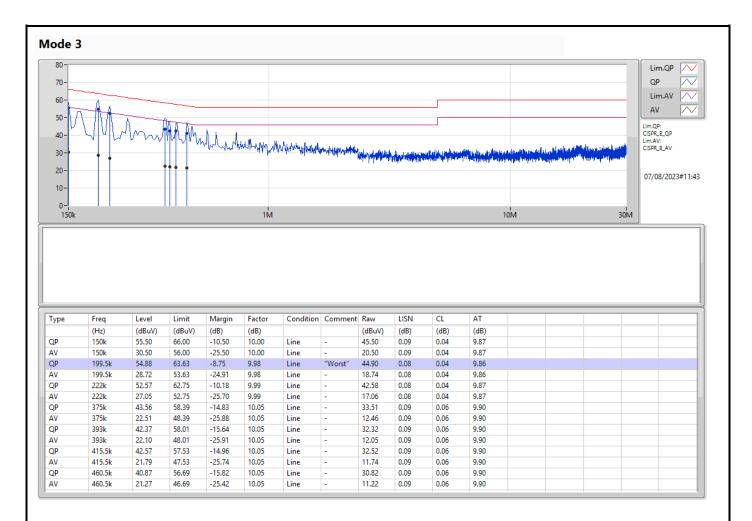
Conducted Emissions at Powerline

Appendix A

Summary								
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition	
			(Hz)	(dBuV)	(dBuV)	(dB)		
Mode 3	Pass	QP	204k	55.40	63.44	-8.04	Neutral	

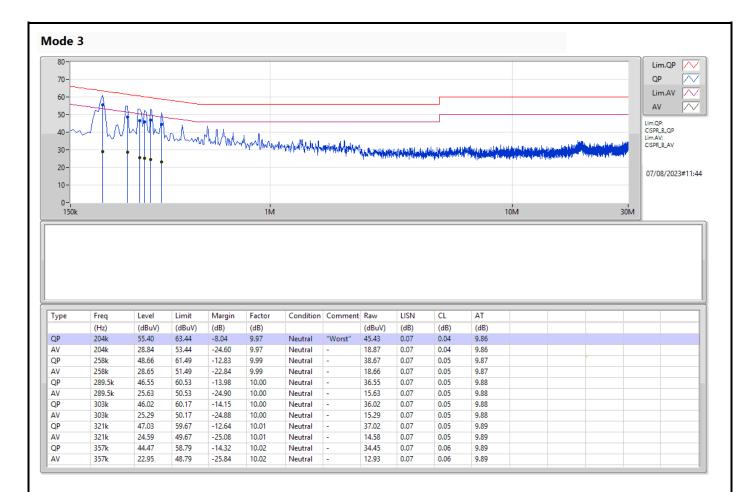








Appendix A





Summary

Mode	Max-N dB (Hz)	Max-OBW (Hz)	ITU-Code	Min-N dB (Hz)	Min-OBW (Hz)
2.4-2.4835GHz	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	10.05M	14.994M	15M0G1D	8.575M	12.144M
802.11g_Nss1,(6Mbps)_1TX	16.35M	21.397M	21M4D1D	15.1M	16.404M
802.11n HT20_Nss1,(MCS0)_1TX	17.15M	20.486M	20M5D1D	16.525M	17.581M

 $\label{eq:max-NdB} Max\cdot N\, dB = Maximum 6dB \ down \ bandwidth; \ Max-OBW = Maximum 99\% \ occupied \ bandwidth; \ Min-NdB = Minimum 6dB \ down \ bandwidth; \ Min-OBW = Minimum 99\% \ occupied \ bandwidth; \ bandwidth; \ Minimum 99\% \ occupied \ bandwidth; \$



Result

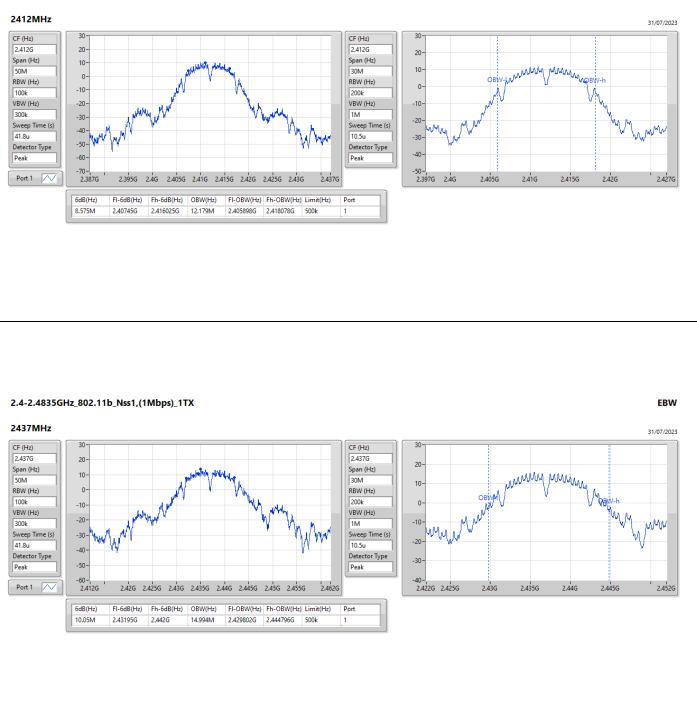
Mode	Result	Limit	Port 1-N dB	Port 1-OBW
		(Hz)	(Hz)	(Hz)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	8.575M	12.179M
2437MHz	Pass	500k	10.05M	14.994M
2462MHz	Pass	500k	8.65M	12.144M
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-
2412MHz	Pass	500k	15.1M	16.426M
2437MHz	Pass	500k	16.35M	21.397M
2462MHz	Pass	500k	15.45M	16.404M
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-
2412MHz	Pass	500k	16.525M	17.634M
2437MHz	Pass	500k	17.15M	20.486M
2462MHz	Pass	500k	16.575M	17.581M

Port X-N dB = Port X 6dB down bandwidth; Port X-OBW = Port X 99% occupied bandwidth



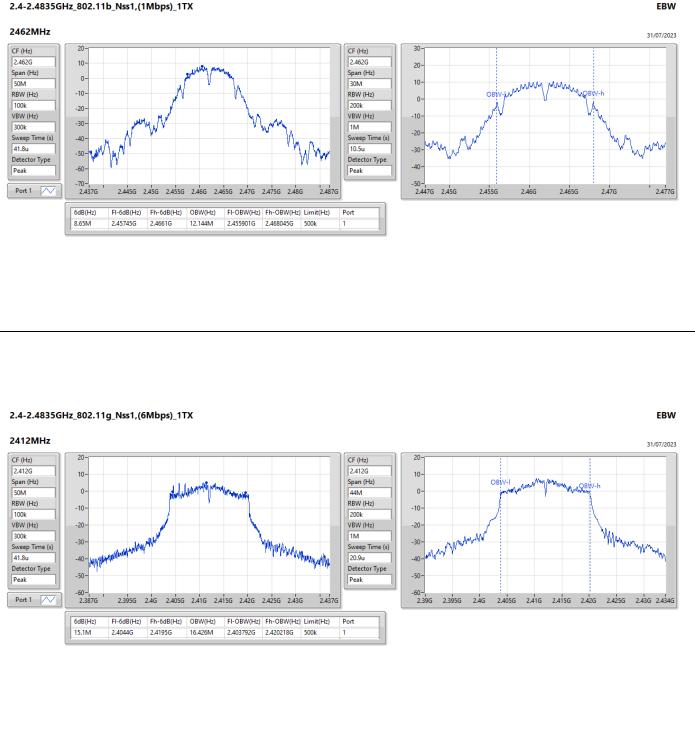
EBW





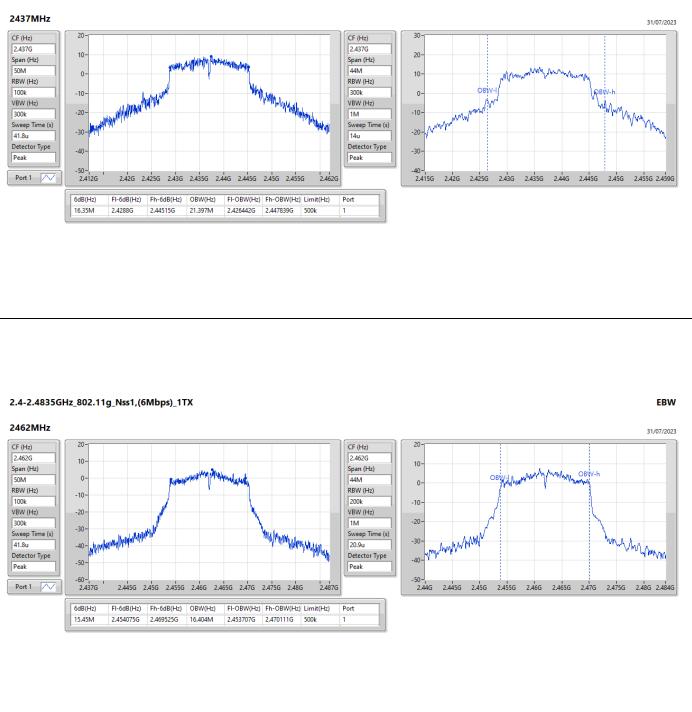








2.4-2.4835GHz_802.11g_Nss1,(6Mbps)_1TX

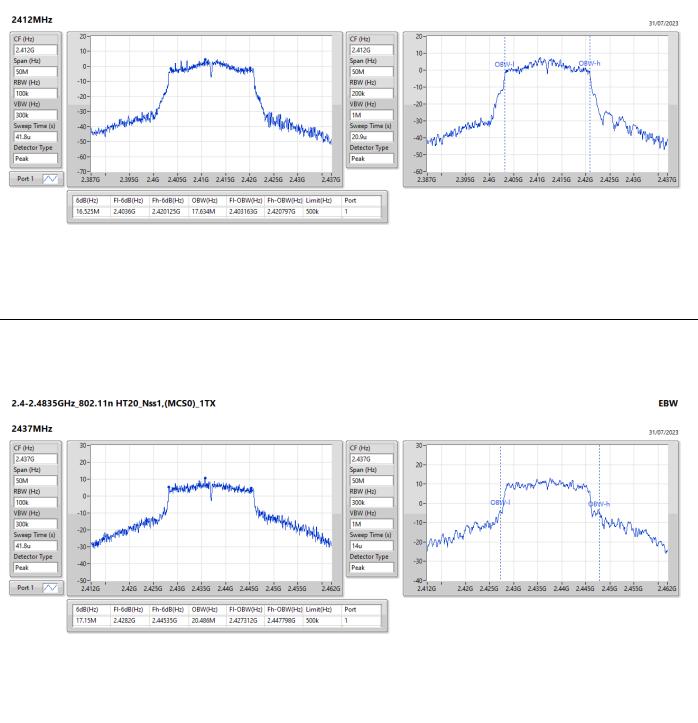


Sporton International Inc. Hsinchu Laboratory

EBW

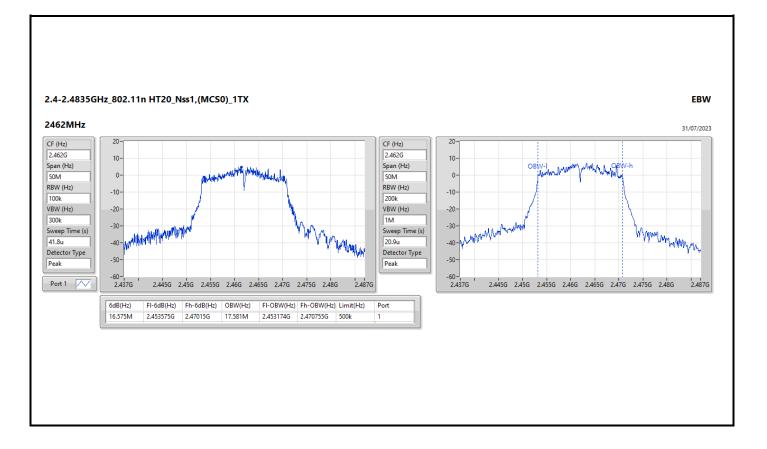


2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX



EBW







Summary

Mode	Total Power (dBm)	Total Power (W)
2.4-2.4835GHz	-	-
802.11b_Nss1,(1Mbps)_1TX	24.18	0.26182
802.11g_Nss1,(6Mbps)_1TX	22.72	0.18707
802.11n HT20_Nss1,(MCS0)_1TX	22.45	0.17579



Average Power

Appendix C

Result

Mode	Result	DG	Port 1	Total Power	Power Limit
		(dBi)	(dBm)	(dBm)	(dBm)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.81	20.07	20.07	30.00
2417MHz	Pass	2.81	21.15	21.15	30.00
2437MHz	Pass	2.81	24.18	24.18	30.00
2457MHz	Pass	2.81	21.25	21.25	30.00
2462MHz	Pass	2.81	19.01	19.01	30.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.81	17.32	17.32	30.00
2417MHz	Pass	2.81	17.93	17.93	30.00
2437MHz	Pass	2.81	22.72	22.72	30.00
2457MHz	Pass	2.81	18.09	18.09	30.00
2462MHz	Pass	2.81	17.26	17.26	30.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	2.81	17.41	17.41	30.00
2417MHz	Pass	2.81	18.36	18.36	30.00
2437MHz	Pass	2.81	22.45	22.45	30.00
2457MHz	Pass	2.81	19.34	19.34	30.00
2462MHz	Pass	2.81	17.20	17.20	30.00

DG = Directional Gain; Port X = Port X output power



Summary

Mode	PD
	(dBm/RBW)
2.4-2.4835GHz	-
802.11b_Nss1,(1Mbps)_1TX	0.27
802.11g_Nss1,(6Mbps)_1TX	-1.68
802.11n HT20_Nss1,(MCS0)_1TX	-2.18

RBW = 3kHz;

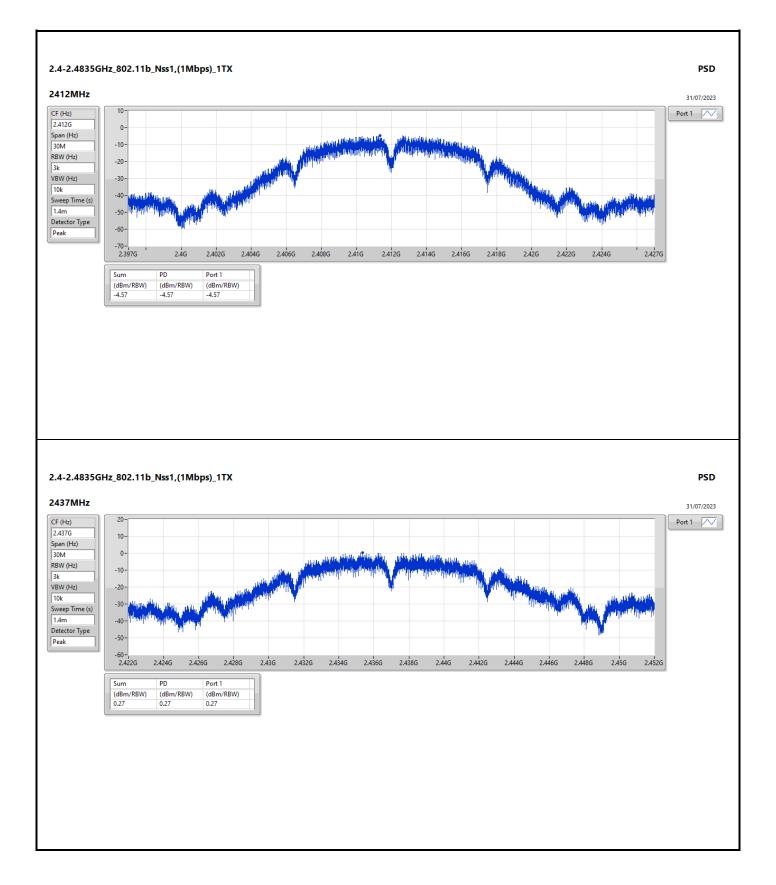


Result

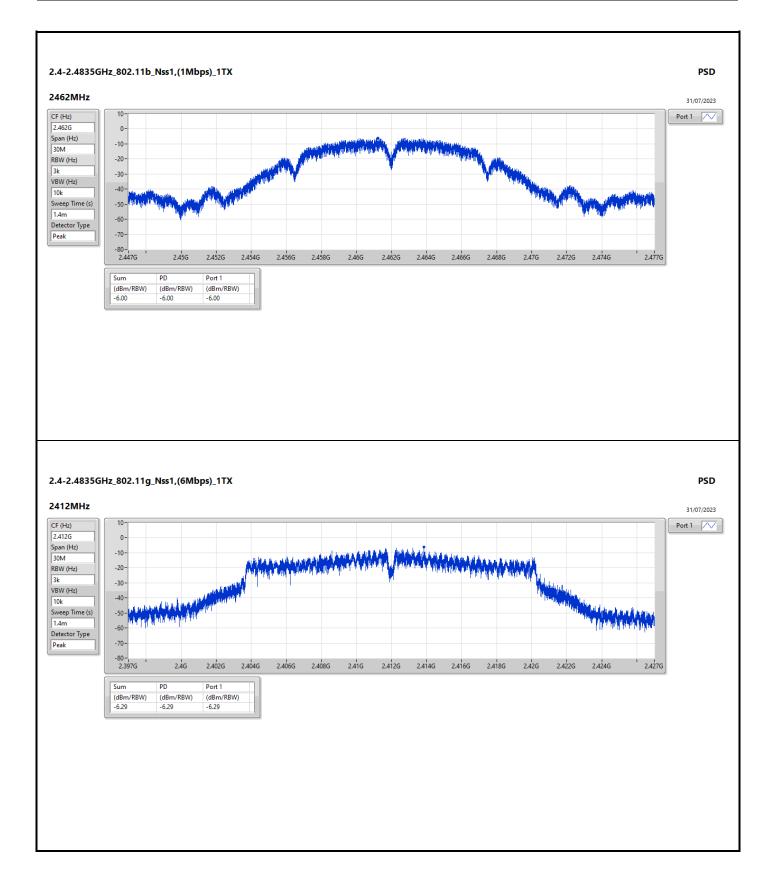
Mode	Result	DG (dBi)	Port 1 (dBm/RBW)	PD (dBm/RBW)	PD Limit (dBm/RBW)
802.11b_Nss1,(1Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.81	-4.57	-4.57	8.00
2437MHz	Pass	2.81	0.27	0.27	8.00
2462MHz	Pass	2.81	-6.00	-6.00	8.00
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-
2412MHz	Pass	2.81	-6.29	-6.29	8.00
2437MHz	Pass	2.81	-1.68	-1.68	8.00
2462MHz	Pass	2.81	-6.53	-6.53	8.00
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-
2412MHz	Pass	2.81	-6.05	-6.05	8.00
2437MHz	Pass	2.81	-2.18	-2.18	8.00
2462MHz	Pass	2.81	-6.47	-6.47	8.00

DG = Directional Gain: RBW = 3kHz; PD = trace bin-by-bin of each transmits port summing can be performed maximum power density; Port X = Port X Power Density;

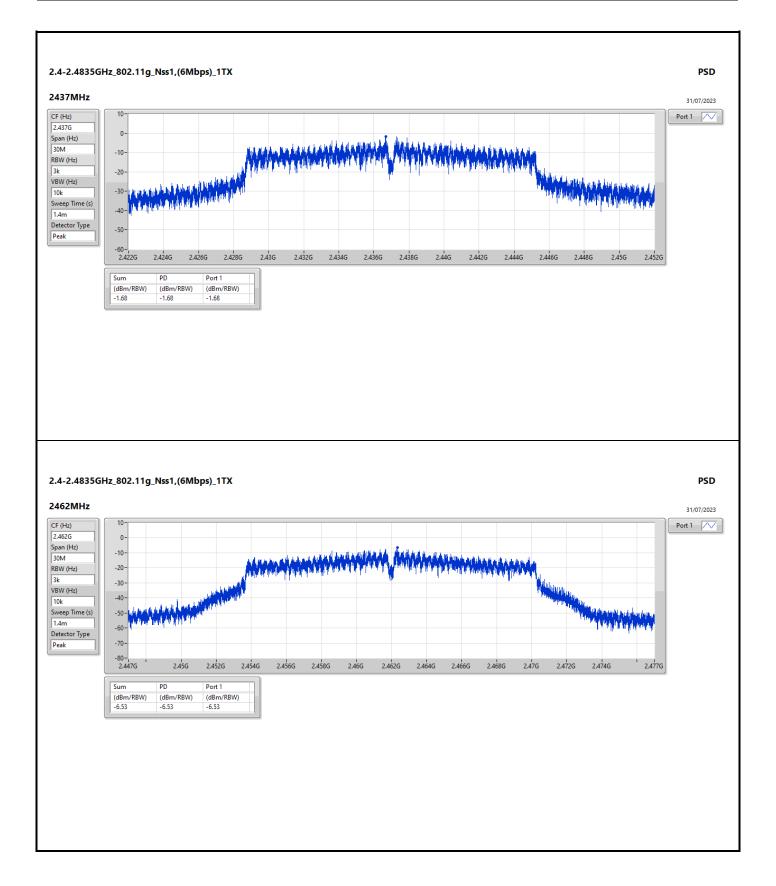




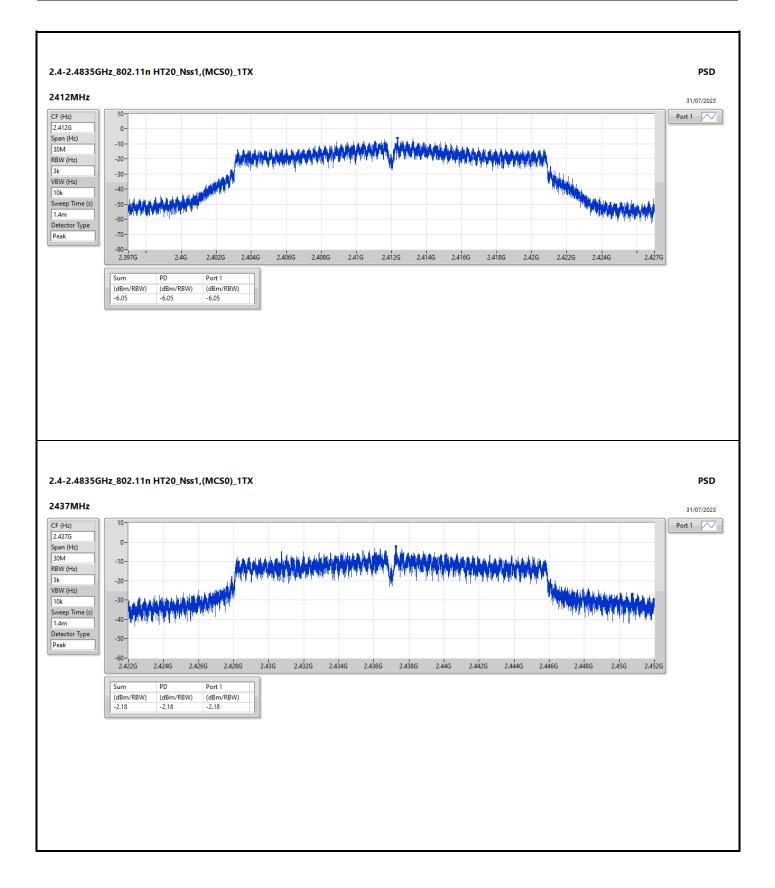




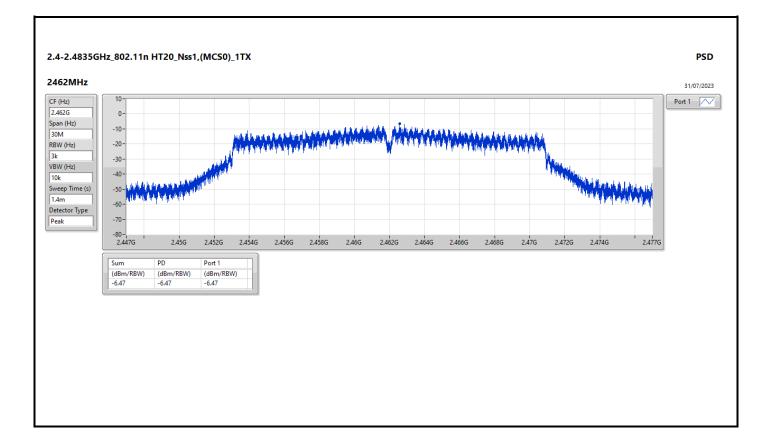














CSE (NdB Down)

Appendix E

Summary

Mode	Result	Ref	Ref	Limit	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Freq	Level	Port
		(Hz)	(dBm)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	(Hz)	(dBm)	
2.4-2.4835GHz	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
802.11b_Nss1,(1Mbps)_1TX	Pass	2.4354G	14.63	-15.37	1.77168G	-53.90	2.398G	-22.12	2.4G	-34.63	2.50342G	-50.60	7.23795G	-35.69	1
802.11g_Nss1,(6Mbps)_1TX	Pass	2.43073G	12.11	-17.89	2.14681G	-54.03	2.39976G	-26.73	2.4G	-28.08	2.5095G	-51.16	7.23795G	-40.35	1
802.11n HT20_Nss1,(MCS0)_1TX	Pass	2.43941G	11.97	-18.03	1.96623G	-53.71	2.39928G	-27.30	2.4G	-28.01	2.5107G	-50.34	7.22952G	-42.09	1

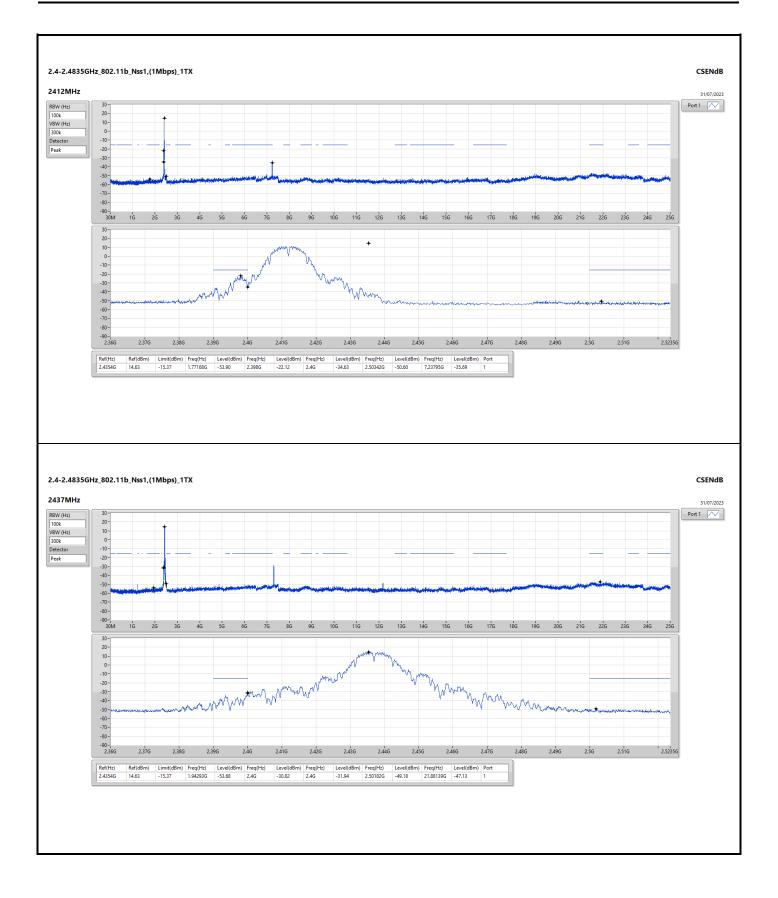


Result

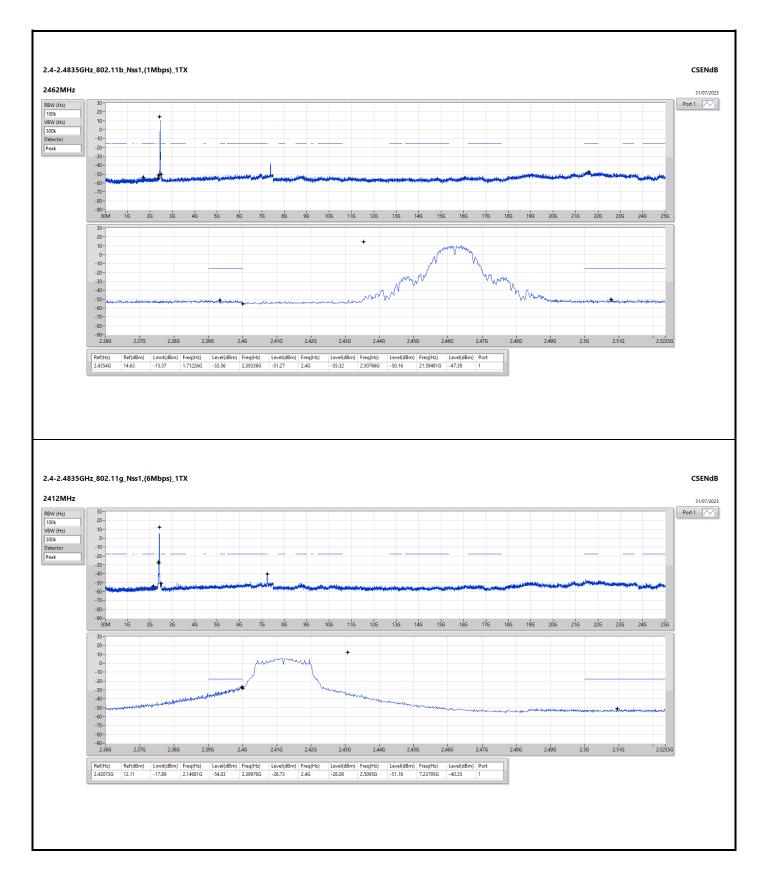
Mode	Result	Ref (Hz)	Ref (dBm)	Limit (dBm)	Freq (Hz)	Level (dBm)	Port								
802.11b_Nss1,(1Mbps)_1TX		-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.4354G	14.63	-15.37	1.77168G	-53.90	2.398G	-22.12	2.4G	-34.63	2.50342G	-50.60	7.23795G	-35.69	1
2437MHz	Pass	2.4354G	14.63	-15.37	1.94293G	-53.68	2.4G	-30.82	2.4G	-31.94	2.50182G	-49.18	21.88139G	-47.13	1
2462MHz	Pass	2.4354G	14.63	-15.37	1.71226G	-53.56	2.39336G	-51.27	2.4G	-55.32	2.50766G	-50.16	21.59481G	-47.39	1
802.11g_Nss1,(6Mbps)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43073G	12.11	-17.89	2.14681G	-54.03	2.39976G	-26.73	2.4G	-28.08	2.5095G	-51.16	7.23795G	-40.35	1
2437MHz	Pass	2.43073G	12.11	-17.89	1.90332G	-53.25	2.39696G	-32.81	2.4G	-34.93	2.50038G	-49.29	21.51895G	-46.54	1
2462MHz	Pass	2.43073G	12.11	-17.89	2.08972G	-53.58	2.39352G	-51.22	2.4G	-54.32	2.50398G	-50.50	21.45152G	-46.75	1
802.11n HT20_Nss1,(MCS0)_1TX	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2412MHz	Pass	2.43941G	11.97	-18.03	1.96623G	-53.71	2.39928G	-27.30	2.4G	-28.01	2.5107G	-50.34	7.22952G	-42.09	1
2437MHz	Pass	2.43941G	11.97	-18.03	39.32M	-53.78	2.39976G	-32.57	2.4G	-32.22	2.50382G	-48.10	21.53862G	-46.58	1
2462MHz	Pass	2.43941G	11.97	-18.03	2.17477G	-52.82	2.39608G	-51.44	2.4G	-55.49	2.5015G	-49.94	21.95443G	-46.84	1



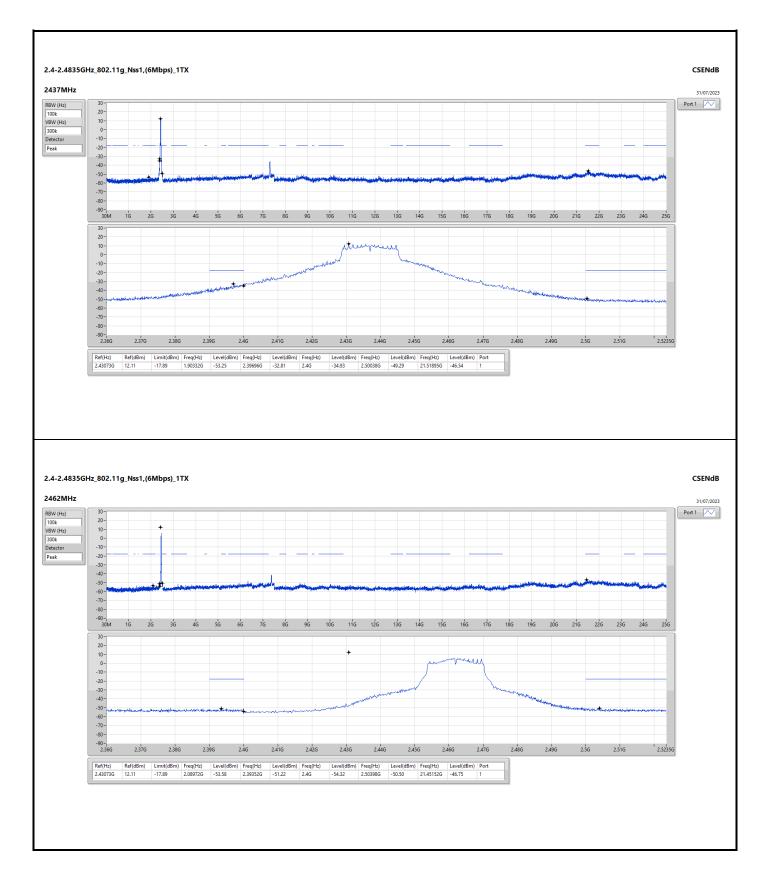
CSE (NdB Down)



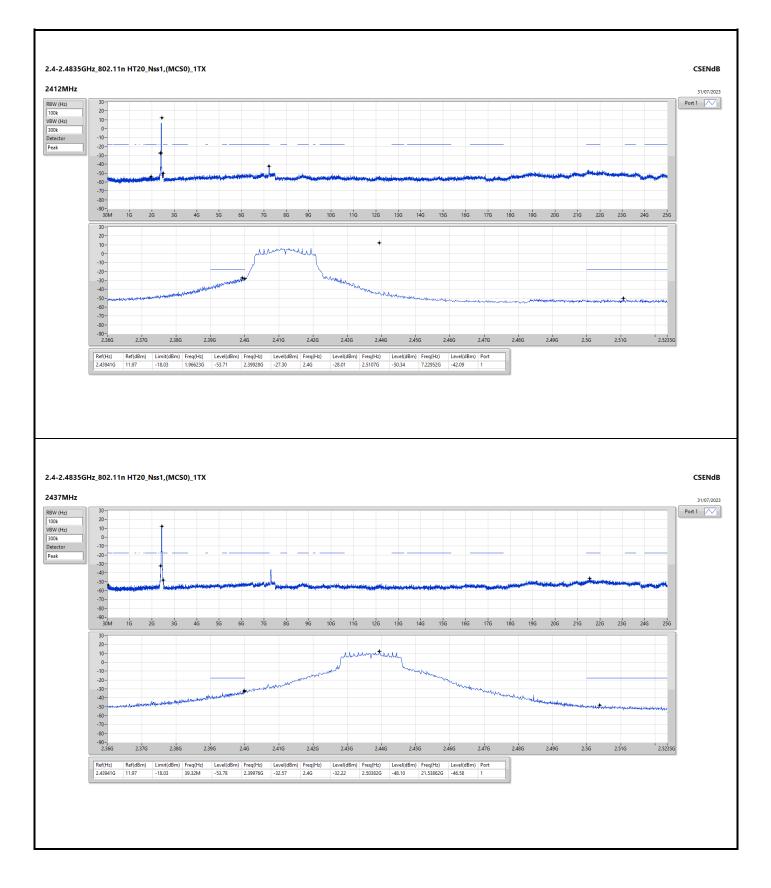




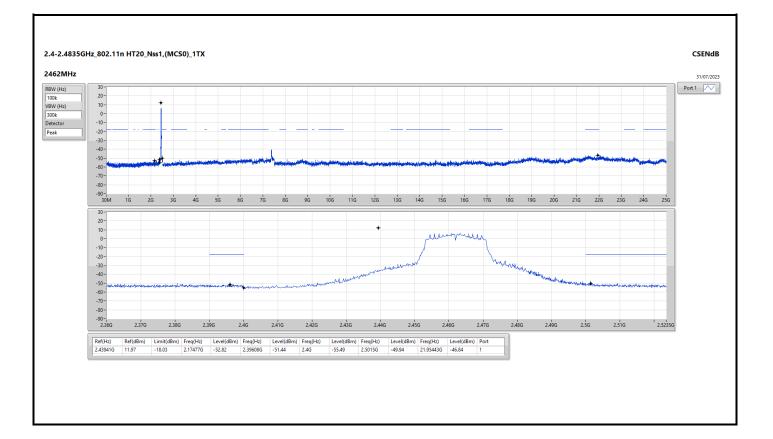














Radiated Emissions below 1GHz

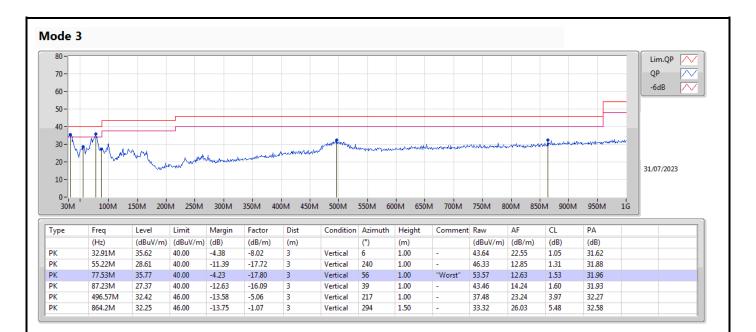
Appendix F.1

Summary							-
Mode	Result	Туре	Freq	Level	Limit	Margin	Condition
			(Hz)	(dBuV/m)	(dBuV/m)	(dB)	
Mode 3	Pass	PK	77.53M	35.77	40.00	-4.23	Vertical



Radiated Emissions below 1GHz

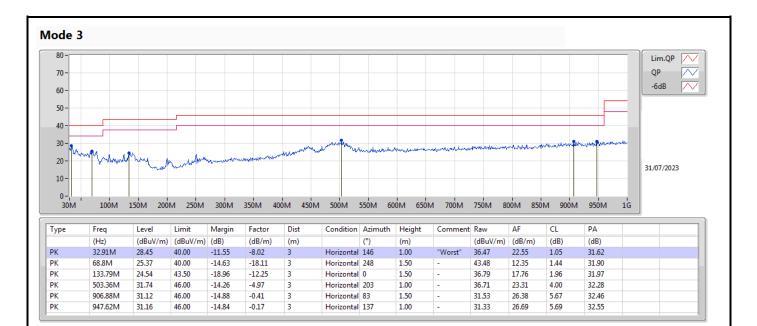
Appendix F.1





Radiated Emissions below 1GHz

Appendix F.1





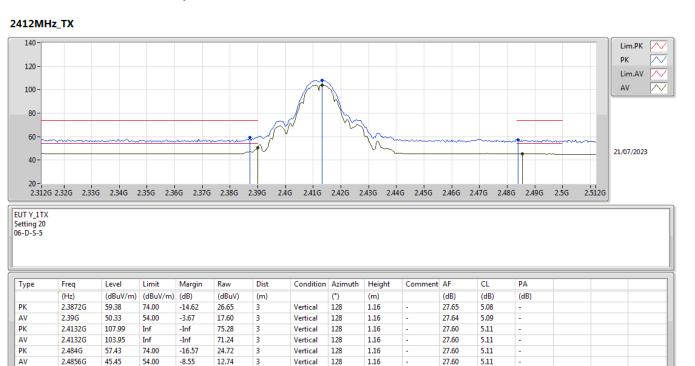
RSE TX above 1GHz

Appendix F.2

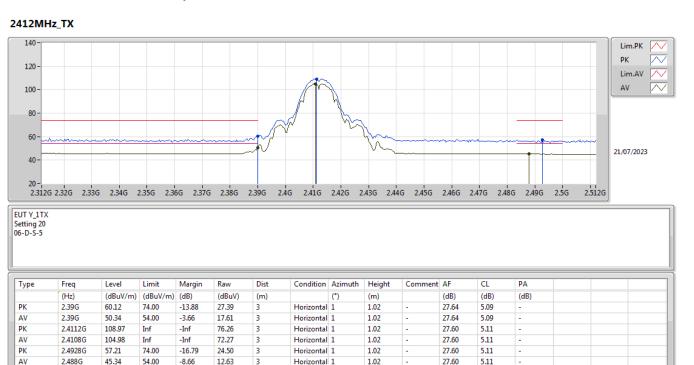
Summary

Mode	Result	Туре	Freq	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Dist	Condition	Azimuth	Height	Comments
2.4-2.4835GHz	-		(Hz)	-	-	(UB) -	(m) -	-	-	(m) -	-
802.11g_Nss1,(6Mbps)_1TX	Pass	AV	2.3898G	53.98	54.00	-0.02	3	Vertical	118	2.07	-

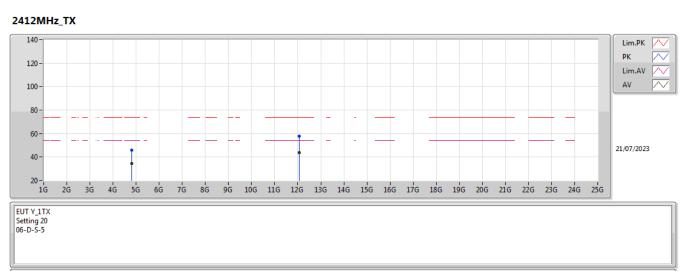






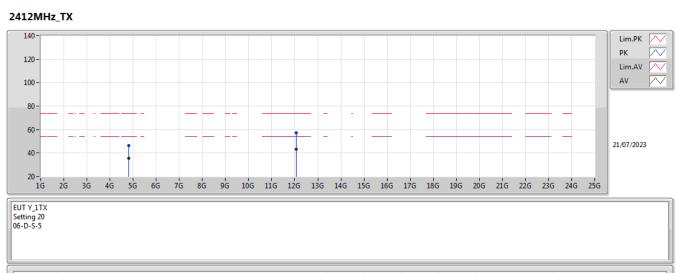






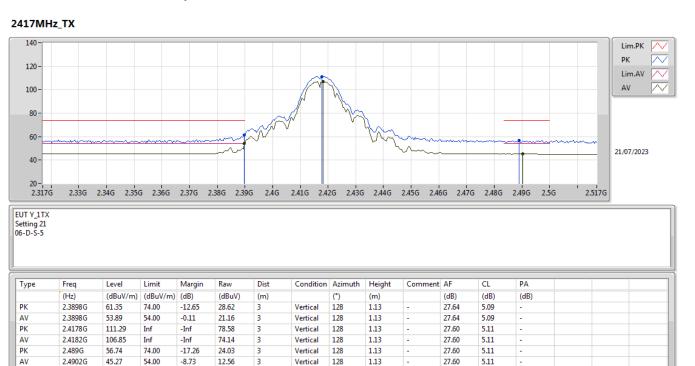
Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	4.82388G	46.08	74.00	-27.92	40.49	3	Vertical	171	1.39	-	31.35	6.76	32.52		
AV	4.82396G	34.41	54.00	-19.59	28.82	3	Vertical	171	1.39	-	31.35	6.76	32.52		
PK	12.05524G	57.85	74.00	-16.15	42.87	3	Vertical	92	2.89	-	39.16	10.50	34.68		
AV	12.05748G	43.59	54.00	-10.41	28.61	3	Vertical	92	2.89	-	39.16	10.50	34.68		



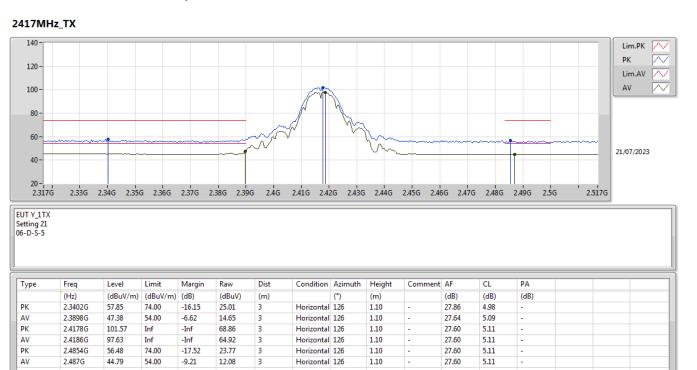


Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	4.82372G	46.43	74.00	-27.57	40.84	3	Horizontal	48	2.33	-	31.35	6.76	32.52		
AV	4.824G	35.65	54.00	-18.35	30.06	3	Horizontal	48	2.33	-	31.35	6.76	32.52		
PK	12.0682G	57.20	74.00	-16.80	42.21	3	Horizontal	83	2.49	-	39.17	10.50	34.68		
AV	12.05944G	43.41	54.00	-10.59	28.43	3	Horizontal	83	2.49	-	39.16	10.50	34.68		











2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX

2.4842G

46.57

54.00

-7.43

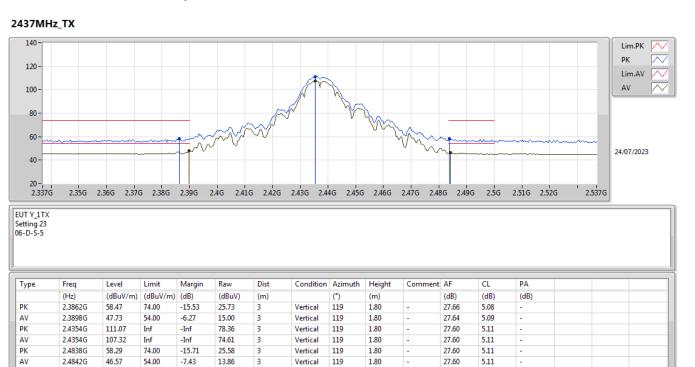
13.86

3

Vertical

119

AV



1.80

5.11

.



2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX

2.4838G

2.4838G

AV

74.00

54.00

-16.08

-6.85

25.21

14.44

3

3

Horizontal 12

Horizontal 12

1.10

1.10

27.60

27.60

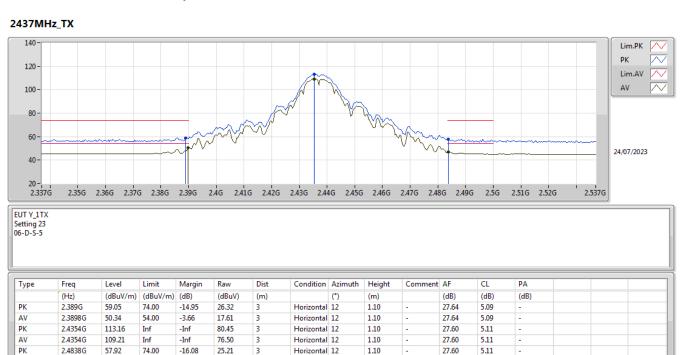
5.11

5.11

.

57.92

47.15





AV

12.1948G

42.88

54.00

-11.12

27.92

3

Vertical

260

2.62

39.11

10.54

34.69

Appendix F.2





AV PK

AV

7.31024G

12.1802G

12.17992G

42.21

56.85

42.83

54.00

74.00

54.00

-11.79

-17.15

-11.17

30.87

41.88

27.86

3

3

3

Horizontal 322

Horizontal 2

Horizontal 2

2.12

1.11

1.11

36.70

39.12

39.12

8.08

10.54

10.54

33.44

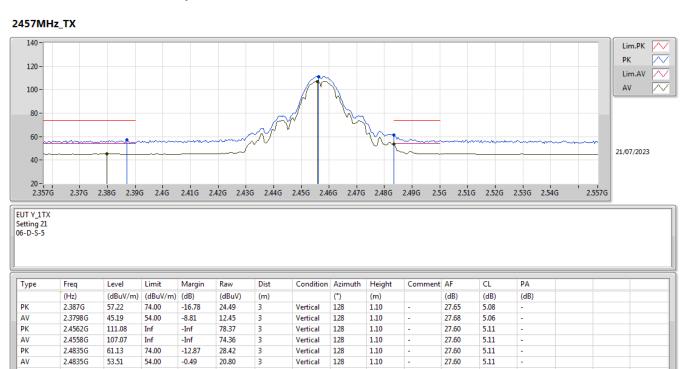
34.69

34.69

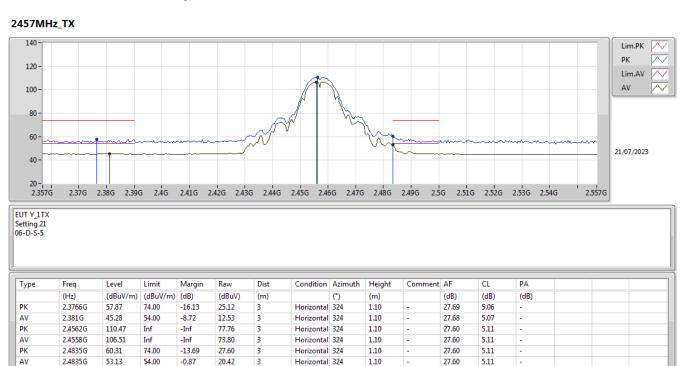
Appendix F.2



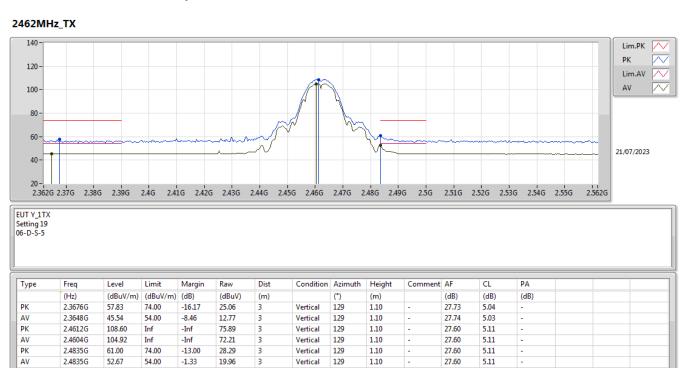




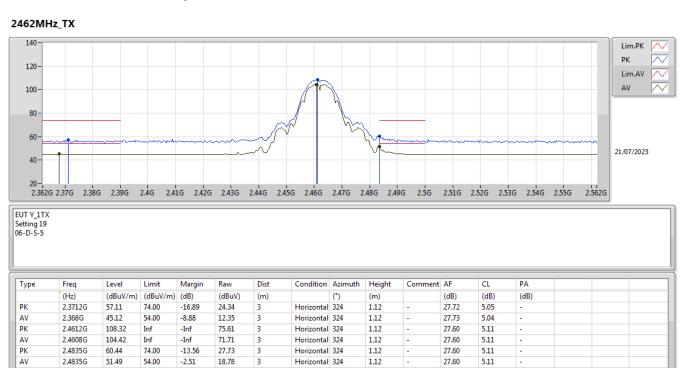














AV

4.92408G

36.07

54.00

-17.93

30.30

3

Vertical

119

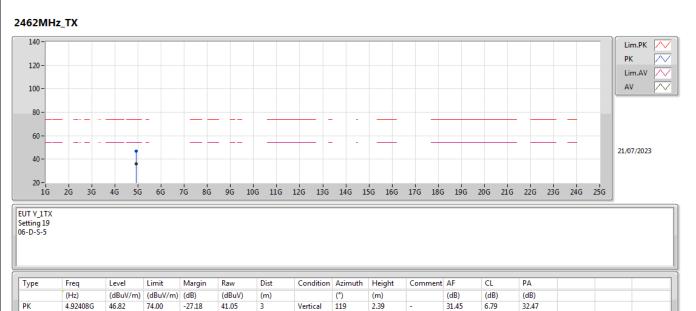
2.39

31.45

6.79

32.47

Appendix F.2





AV

4.924G

36.87

54.00

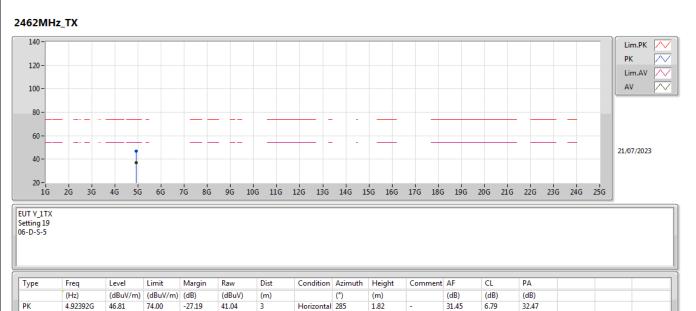
-17.13

31.10

3

Appendix F.2

2.4-2.4835GHz_802.11b_Nss1,(1Mbps)_1TX



Horizontal 285

1.82

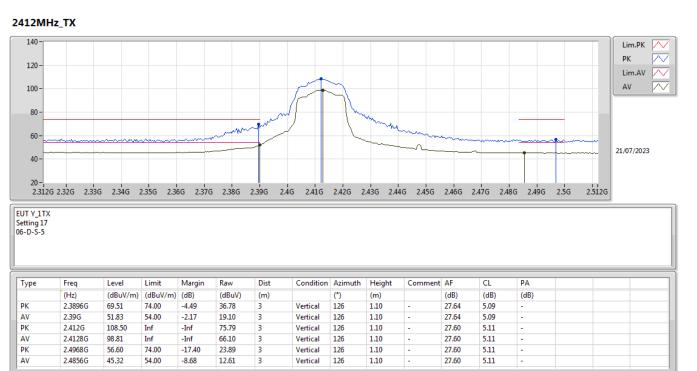
31.45

6.79

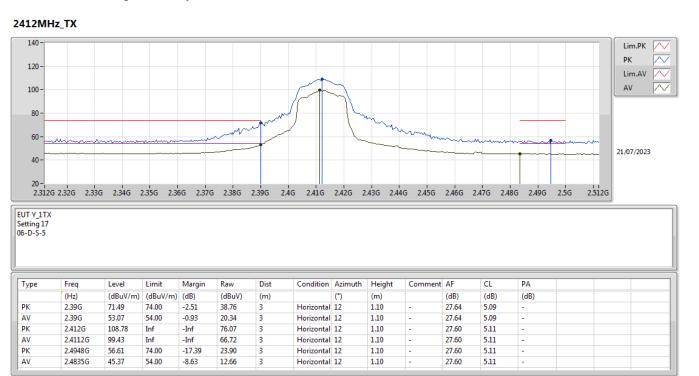
32.47

Sporton International Inc. Hsinchu Laboratory









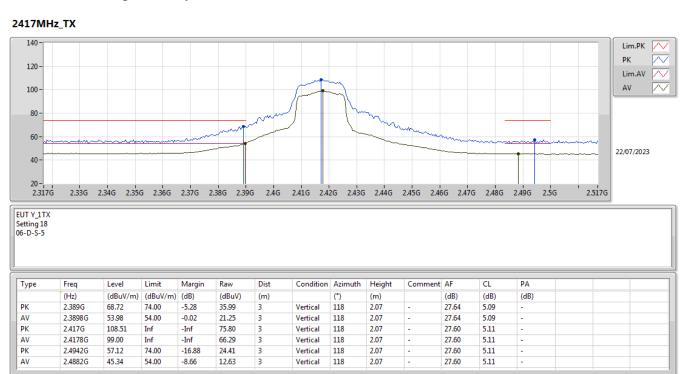




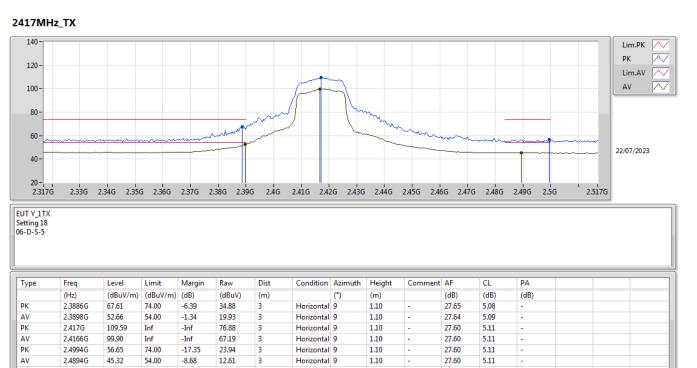














AV

2.4835G

49.49

54.00

-4.51

16.78

3

Vertical

122

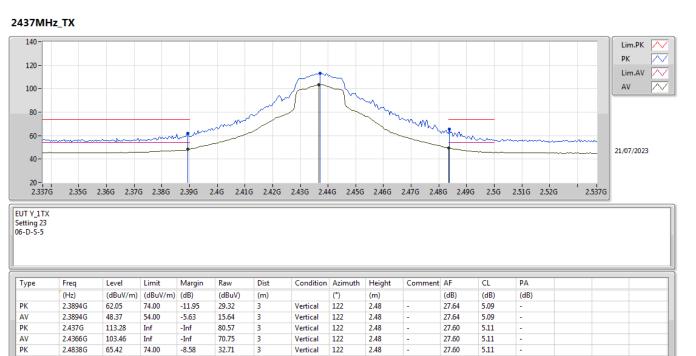
2.48

27.60

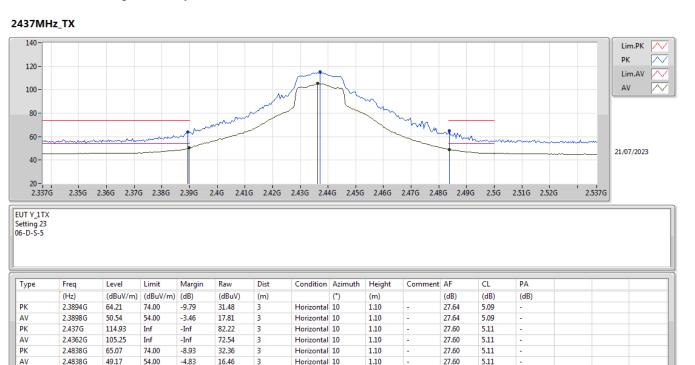
5.11

.

Appendix F.2







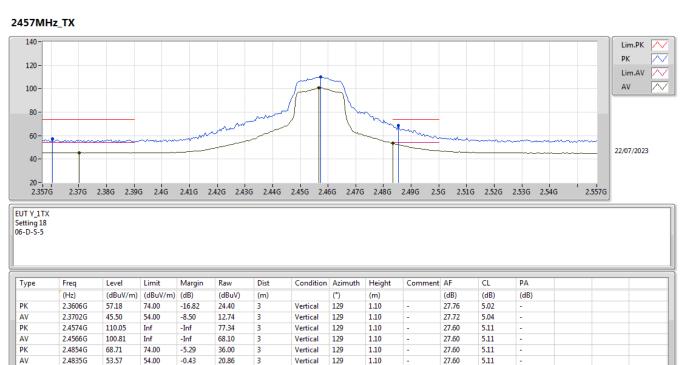




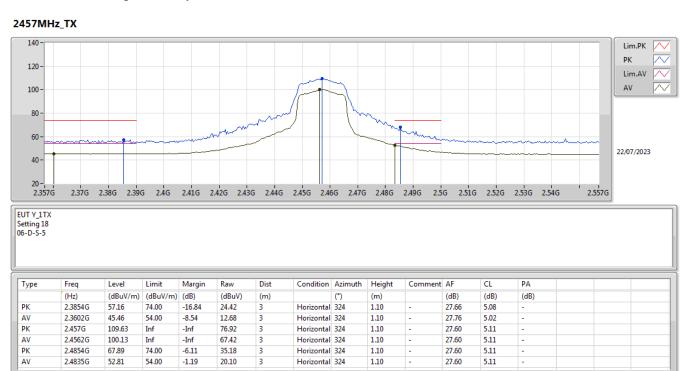




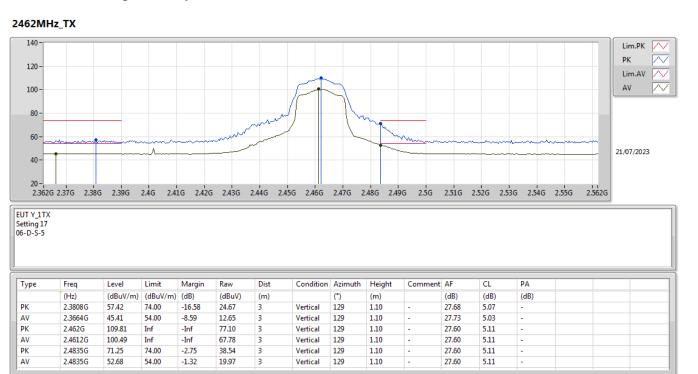




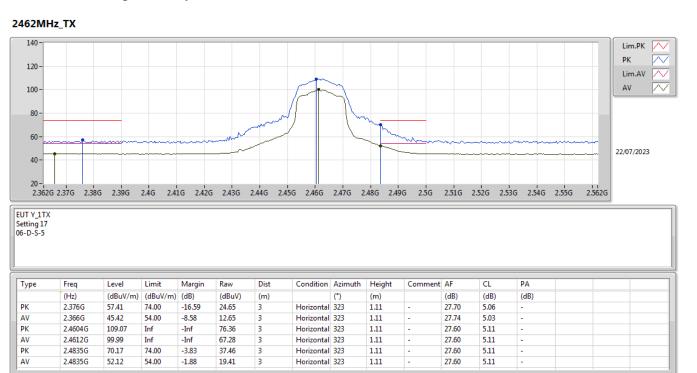






















PK

AV

2.4122G

2.4126G

107.57

99.21

Inf

Inf

-Inf

-Inf

76.54

68.17

3

3

Vertical

Vertical

295

295

1.63

1.63

27.52

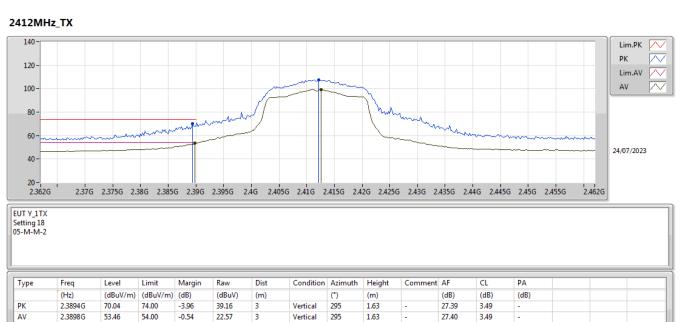
27.53

3.51

3.51

Appendix F.2

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX





РК

AV

2.4124G

2.4126G

108.32

100.15

Inf

Inf

-Inf

-Inf

77.29

69.11

3

3

Horizontal 198

Horizontal 198

3.00

3.00

27.52

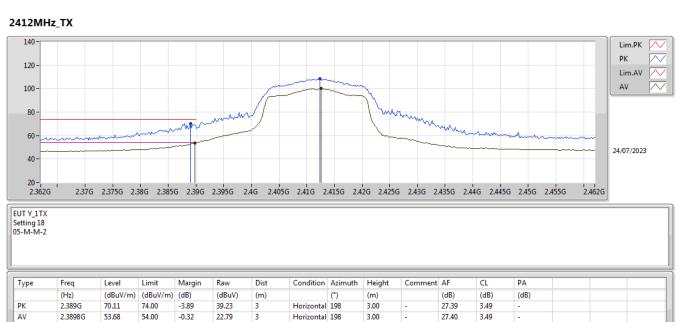
27.53

3.51

3.51

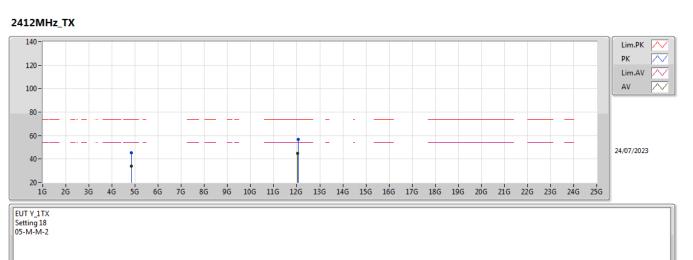
Appendix F.2

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX





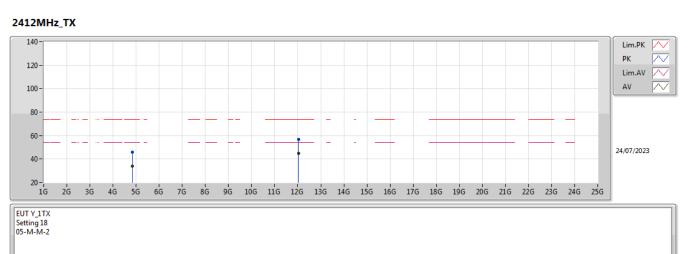




Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	4.8465G	45.58	74.00	-28.42	42.55	3	Vertical	227	1.42	-	32.68	5.95	35.60		
AV	4.8362G	33.77	54.00	-20.23	30.81	3	Vertical	227	1.42	-	32.62	5.94	35.60		
PK	12.0698G	56.88	74.00	-17.12	41.89	3	Vertical	360	1.55	-	38.94	9.43	33.38		
AV	12.0378G	44.58	54.00	-9.42	29.69	3	Vertical	360	1.55	-	38.88	9.42	33.41		



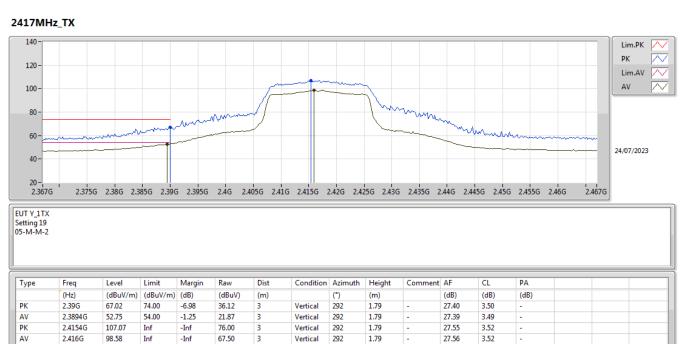




Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
РК	4.848G	45.81	74.00	-28.19	42.77	3	Horizontal	37	1.80	-	32.69	5.95	35.60		
AV	4.8476G	33.75	54.00	-20.25	30.71	3	Horizontal	37	1.80	-	32.69	5.95	35.60		
PK	12.02893G	56.79	74.00	-17.21	41.94	3	Horizontal	32	1.82	-	38.86	9.41	33.42		
AV	12.03723G	44.65	54.00	-9.35	29.77	3	Horizontal	32	1.82	-	38.87	9.42	33.41		

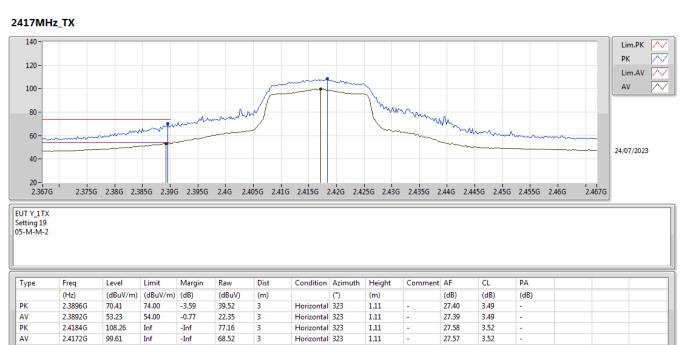


2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX





2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX





2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX

2.4362G

2.4835G

AV

2.485G

103.31

66.17

50.09

Inf

74.00

54.00

-Inf

-7.83

-3.91

72.07

34.68

18.61

3

3

3

Vertical

Vertical

Vertical

252

252

252

1.80

1.80

1.80

27.70

27.90

27.90

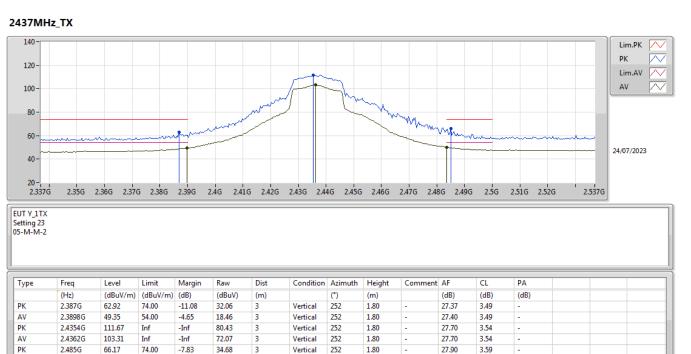
3.54

3.59

3.58

-

.





2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX

2.4842G

2.4835G

AV

74.00

54.00

-8.86

-2.55

33.66

19.97

3

3

Horizontal 198

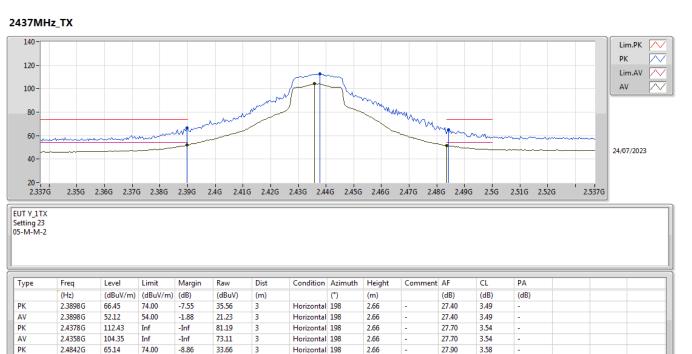
Horizontal 198

2.66

2.66

65.14

51.45



3.58

3.58

-

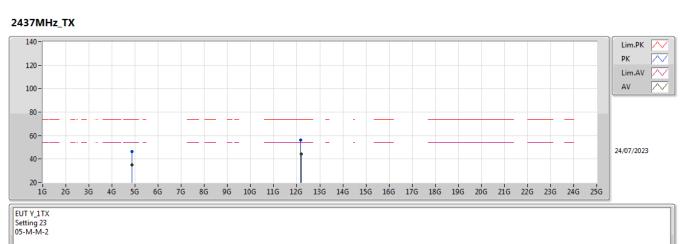
.

27.90

27.90



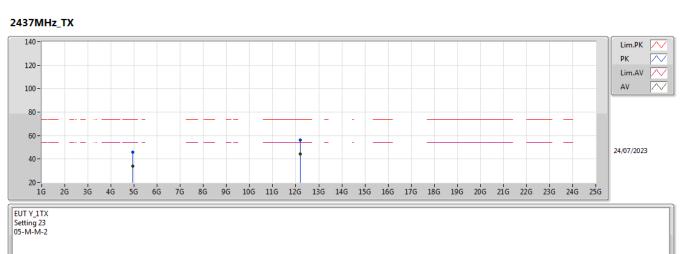




Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	4.8768G	46.40	74.00	-27.60	43.31	3	Vertical	122	2.12	-	32.70	5.98	35.59		
AV	4.8726G	35.01	54.00	-18.99	31.93	3	Vertical	122	2.12	-	32.70	5.97	35.59		
PK	12.1823G	56.19	74.00	-17.81	41.07	3	Vertical	287.1	1.80	-	38.90	9.48	33.26		
AV	12.1901G	44.44	54.00	-9.56	29.30	3	Vertical	287.1	1.80	-	38.90	9.49	33.25		







Туре	Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA		
	(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK	4.9492G	45.94	74.00	-28.06	42.56	3	Horizontal	216	1.80	-	32.90	6.05	35.57		
AV	4.9472G	34.09	54.00	-19.91	30.72	3	Horizontal	216	1.80	-	32.89	6.05	35.57		
PK	12.1898G	56.38	74.00	-17.62	41.24	3	Horizontal	360	1.80	-	38.90	9.49	33.25		
AV	12.1866G	44.45	54.00	-9.55	29.32	3	Horizontal	360	1.80	-	38.90	9.48	33.25		



AV

2.4835G

53.42

54.00

-0.58

21.94

3

Vertical

260

1.80

Appendix F.2

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX



27.90

3.58



AV

2.4835G

52.63

-1.37

21.15

3

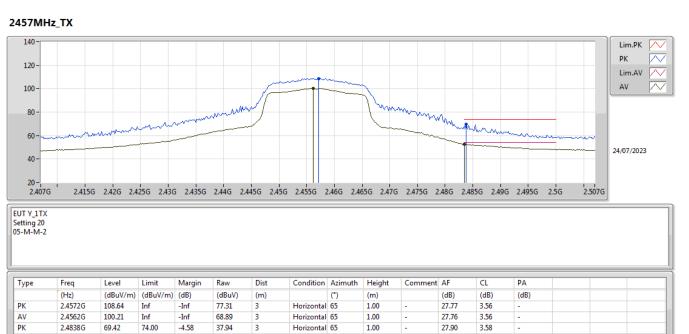
Horizontal 65

1.00

54.00

Appendix F.2

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX



27.90

3.58



РК

AV

2.4836G

2.4838G

71.73

53.79

74.00

54.00

-2.27

-0.21

40.25

22.31

3

3

Vertical

Vertical

261

261

1.80

1.80

27.90

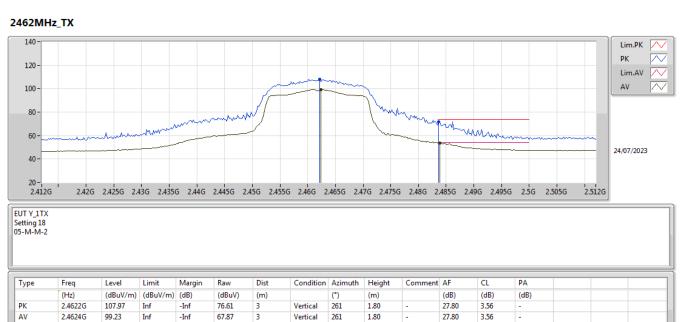
27.90

3.58

3.58

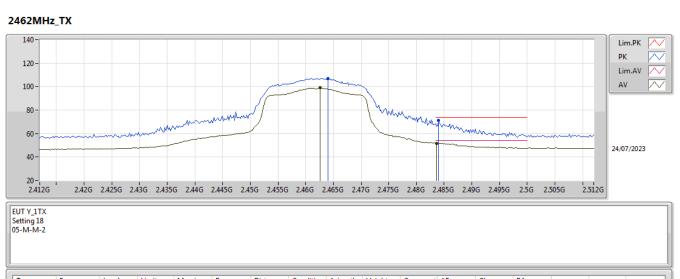
Appendix F.2

2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX





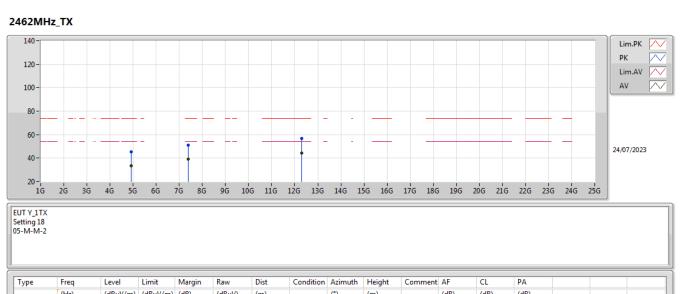
2.4-2.4835GHz_802.11n HT20_Nss1,(MCS0)_1TX



Freq	Level	Limit	Margin	Raw	Dist	Condition	Azimuth	Height	Comment	AF	CL	PA			
(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)			
2.464G	107.05	Inf	-Inf	75.69	3	Horizontal	70	1.09	-	27.80	3.56	-			
2.4626G	99.01	Inf	-Inf	67.65	3	Horizontal	70	1.09	-	27.80	3.56	-			
2.484G	71.00	74.00	-3.00	39.52	3	Horizontal	70	1.09	-	27.90	3.58	-			
2.4836G	51.77	54.00	-2.23	20.29	3	Horizontal	70	1.09	-	27.90	3.58	-			
	2.464G 2.4626G 2.484G	2.464G 107.05 2.4626G 99.01 2.484G 71.00	2.464G 107.05 Inf 2.4626G 99.01 Inf 2.484G 71.00 74.00	2.464G 107.05 Inf -Inf 2.4626G 99.01 Inf -Inf 2.484G 71.00 74.00 -3.00	2.464G 107.05 Inf -Inf 75.69 2.4626G 99.01 Inf -Inf 67.65 2.484G 71.00 74.00 -3.00 39.52	2.464G 107.05 Inf -Inf 75.69 3 2.4626G 99.01 Inf -Inf 67.65 3 2.484G 71.00 74.00 -3.00 39.52 3	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 2.4626G 99.01 Inf -Inf 67.65 3 Horizontal 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 2.4626G 99.01 Inf -Inf 67.65 3 Horizontal 70 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 2.4626G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70 1.09	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 - 2.4626G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 - 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70 1.09 -	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 - 27.80 2.462G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 - 27.80 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70 1.09 - 27.90	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 - 27.80 3.56 2.462G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 - 27.80 3.56 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70 1.09 - 27.90 3.58	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 - 27.80 3.56 - 2.462G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 - 27.80 3.56 - 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70 1.09 - 27.90 3.58 -	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 - 27.80 3.56 - 2.462G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 - 27.80 3.56 - 2.484G 71.00 74.00 -3.00 39.52 3 Horizontal 70 1.09 - 27.90 3.58 -	2.464G 107.05 Inf -Inf 75.69 3 Horizontal 70 1.09 - 27.80 3.56 - - 2.462G 99.01 Inf -Inf 67.65 3 Horizontal 70 1.09 - 27.80 3.56 - - - 2.484 71.00 74.00 3.50 3.55 -

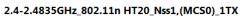






- 176	c	ineq	LEVEI	LITTIC	imargini	TXD VV	Dist	Condition	Azimum	rieigin	Comment		CL.	F.A.		
		(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
PK		4.9178G	45.19	74.00	-28.81	41.98	3	Vertical	136	1.80	-	32.77	6.02	35.58		
AV		4.92108G	33.38	54.00	-20.62	30.16	3	Vertical	136	1.80	-	32.78	6.02	35.58		
РК		7.38008G	51.21	74.00	-22.79	41.82	3	Vertical	335	1.52	-	36.64	7.40	34.65		
AV		7.387G	39.25	54.00	-14.75	29.86	3	Vertical	335	1.52	-	36.63	7.40	34.64		
PK		12.3002G	56.63	74.00	-17.37	41.32	3	Vertical	144	1.00	-	38.90	9.54	33.13		
AV		12.31416G	44.52	54.00	-9.48	29.20	3	Vertical	144	1.00	-	38.90	9.54	33.12		







	rype	Freq	Level	Limit	wargin	NdW	Dist	Condition	Azimuth	Height	Comment	AF	CL .	PA		
		(Hz)	(dBuV/m)	(dBuV/m)	(dB)	(dBuV)	(m)		(°)	(m)		(dB)	(dB)	(dB)		
F	РК	4.92136G	46.53	74.00	-27.47	43.30	3	Horizontal	349	2.03	-	32.79	6.02	35.58		
A	ΑV	4.9208G	35.11	54.00	-18.89	31.89	3	Horizontal	349	2.03	-	32.78	6.02	35.58		
F	РК	7.38192G	51.43	74.00	-22.57	42.03	3	Horizontal	330.1	1.80	-	36.64	7.40	34.64		
A	AV	7.382G	39.34	54.00	-14.66	29.94	3	Horizontal	330.1	1.80	-	36.64	7.40	34.64		
F	РК	12.30772G	57.32	74.00	-16.68	42.00	3	Horizontal	96	1.80	-	38.90	9.54	33.12		
4	٩V	12.3138G	44.52	54.00	-9.48	29.20	3	Horizontal	96	1.80	-	38.90	9.54	33.12		